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FAILURE MODE AND EFFECT ANALYSIS AIRLOCK

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VOLUME I

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MCDONNELL DOUGLAS ASTRONAUTICS COMPANY
EASTERN DIVISION

MCDONNELL DOUGLAS CORPORATION

CR 151511

FAILURE MODE AND EFFECT ANALYSIS

AIRLOCK

VOLUME I

NASA CONTRACT 9-6555
Mc Donnell Douglas

Basic July 10, 1970
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PREFACE

The Airlock Failure Mode and Effect Analysis has been prepared in compliance with the requirements of Contract NAS 9-6555, Statement of Work, Appendix D, as specified in Report E855, Airlock Project Reliability Plan, dated 2 March 1970. Analysis of selected second failures is included in accordance with CCP 080 (Contract Ammendment 125). This report presents the Failure Mode and Effect Analysis in three (3) volumes. The Single Point Failure List previously a part of this report is included in Reports MDC E0365, Airlock Module Critical Item List, and MDC E0408, Airlock GSE Critical Item List.

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8/31/71	Entire Document Retyped			Revision B	A. J. Gegen	G. W. Krowl

I PURPOSE AND SCOPE

This report presents a qualitative analysis of single failures of Airlock Module (AM) flight components and Ground Support Equipment (GSE) and selected second failures of flight components and the effect of such failures on system operation, on mission objectives, and on crew and personnel safety. For purposes of this analysis, the flight mission extends from Skylab-1 lift-off to Skylab 1/4 separation. Analysis of GSE concentrates on the last 72 hours of countdown; but includes other test operations for Hazardous GSE. Since the analysis allows identification of failures which adversely affect crew or personnel safety or primary mission objectives, the primary use of analysis results in the identification of critical modes of failure (Categories I, II, A or B) in order to propose design changes to eliminate or minimize these failure effects or to provide justification for their retention.

Additional uses of analysis results include:

- o Recommending design changes to avoid non-critical failure effects where practical.
- o Providing inputs for establishing rules and procedures for the conduct of the mission.
- o Providing cases for crew training and diagnostic procedures for failure isolation.
- o Providing inputs to Test Procedures.

This analysis was performed on a functional subsystem basis at the replaceable item level and includes the electrical, electronic, electromechanical, and mechanical components, which comprise the AM design as of 7 May 1971. The type of items excluded from the analysis are identified in Paragraph II.

Section 11.0 in Volume III of the report presents analysis of Mission Essential and Hazardous GSE. Ground rules pertinent only to the GSE FMEA are provided as a separate introduction to Section 11.0.

II. ANALYSIS DISCUSSION - SINGLE FAILURES

Equipment malfunctions are uniquely defined in terms of failure modes at the "output level" and the resulting failure effects are described. Except where noted otherwise in the analysis, each component failure mode is analyzed on the assumption that the remainder of the AM is functioning properly. A description of the information presented in the various columns of the form used for the collection and presentation of this information follows:

A. COMPONENT

This column identifies the component by name, specification control drawing (SCD) number or procurement specification (PS) number. The component type, and circuit symbol are included, where applicable. Also included is a functional description of the component whenever the component name does not adequately describe the components' functional application. When more than one component is entered, the analysis is applicable to each component on an individual basis. Ground rules and assumptions which are pertinent to this column are presented below:

(a) The following equipment are analyzed:

(1) Airborne contractor furnished equipment (CFE).

(2) Mission essential ground support equipment (GSE); that GSE required to support terminal countdown (the last 72 hours prior to lift-off).

(3) Hazardous GSE; as defined per MSC document "GSE General Design Requirements for AAP", dated 1 October 1968.

(b) Airborne CFE used solely for ground testing are excluded from the analysis. This exclusion does not apply to Airborne CFE which is operated during the terminal countdown in a unique fashion not related to flight modes of operation and failure.

(c) AM structure and passive electrical conductors such as wiring, terminals, connectors, buses, shunts, etc., are excluded from the analysis.

(d) Actively redundant components whose failures are undetectable by crew or ground and have no effect on system performance, crew safety or mission continuation are excluded from the analysis of single failures. The analysis of failure effects of these components is included in the analysis of second failures section as described in paragraph V.

(e) In those cases of standby redundancies where a one-for-one backup unit is provided analysis of the backup unit (or units) is not conducted except as noted in paragraph V. Also excluded from the analysis are those components (that are in standby) associated with the standby unit (or units).

B. MISSION PHASE

This column identifies the mission phase for which a component failure mode is being considered. Coding has been used to facilitate consideration of individual or multiple phases. When more than one phase is entered, the analysis is applicable to each phase. The scope of this report requires that airborne CFE be analyzed for failure effects related to the flight phase of the mission (i.e., SL-1 lift-off to SL 1/4 separation). However, as mutually agreed upon between the NASA and MDAC-East, equipment operating during the terminal countdown in a "unique fashion" not related to flight modes of operation is analyzed. Analysis of such equipment

failure modes peculiar to the mode of operation during terminal countdown is included in mission phase TC.

The mission phase codes used in this report are presented in Table II-1.

TABLE II-1

MISSION PHASE CODES

CODE	DESCRIPTION
L	SL-1 lift-off to completion of SL 1/2 docking.
SL 1/2	Completion of SL 1/2 docking to SL 1/2 separation.
S1	Storage period (from SL 1/2 separation to completion of SL 1/3 docking).
SL 1/3	Completion of SL 1/3 docking to SL 1/3 separation.
S2	Storage period (from SL 1/3 separation to completion of SL 1/4 docking).
SL 1/4	Completion of SL 1/4 docking to SL 1/4 separation.
M	All manned phases (SL 1/2 + SL 1/3 + SL 1/4).
S	Storage phases (S1 + S2).
EVA	Extravehicular activity period.
IVA	Intravehicular activity period.
TC	Terminal Countdown

C. FAILURE MODE

This entry identifies the assumed component failure mode evaluated for each mission phase in which the component is operational. When more than one failure mode is entered, the analysis is applicable to each failure mode on an individual basis. The following failure modes are excluded from the analysis:[1]

- Autoactivation of relays and switches.
- Relay and switch contacts fail closed.
- Relay and switch contacts fail short to ground.
- Autoactivation of pyrotechnic devices.
- Explosion or rupture of pressure vessels.
- Failure of structure.
- Relay contact "chatter".

D. MOST PROBABLE FAILURE CAUSE

This entry identifies the environmental stresses and/or other adverse conditions most likely to cause the component failure mode under investigation.

E. FAILURE EFFECT

SYSTEM

This entry describes the effect of the component failure mode on the affected system(s), including interfacing systems. Available redundancy is indicated, where applicable.

MISSION

This entry describes the effect of the component failure mode on the mission. A qualitative statement pertaining to crew safety is also included in this entry, when applicable.

1 Rationale for exclusion of certain failure modes was provided in MDAC-East Letter 646-E450-598.

F. CREW

INDICATION

This entry identifies those on-board cues which a particular failure presents to the crew. These cues may be instrument readings, lights, odors, sound, etc.

ACTION

This entry describes possible crew actions available to negate or mini failure effects when a failure indication is received. Actions such "crew informs ground of failure" are not entered unless ground awaren of the failure is necessary in determining subsequent action. Where actions are included for multiple mission phases including storage ph it is understood that the action applies only to the manned phases.

G. GROUND

INDICATIONS

This entry identifies those cues which a particular failure mode pre to ground monitoring.

ACTION

This entry describes available ground actions when a failure indicati received. Actions such as "ground informs crew of failure" are not unless crew awareness of the failure is necessary in determining subs action.

H. TIME TO ABORT

This entry, which applies to failures occurring during the manned ph presents an estimate of the maximum time that the manned phase would allowed to continue before mission termination procedures are initi If mission duration is not affected an "N/A" (Not Applicable) is ente The "time to abort" estimates are based upon engineering judgement, design analyses when such analyses exist.

I. FAILURE CATEGORY

This entry contains a code which classifies the failure effect on mission performance and crew safety in terms of "criticality". The classifications are as follows:

CODE	DESCRIPTION
I	A failure which could adversely affect crew safety.
II	A failure which could result in not achieving a primary mission objective, but does not adversely affect crew safety.
IIIa	A failure which could result in not achieving a secondary mission objective, but does not adversely affect crew safety nor preclude the achievement of any primary mission objective.
IIIb	A failure which would not result in loss of a primary or secondary mission objective nor adversely affect crew safety.

In categorizing failure effects it is assumed that the crew will use available redundancy, alternate modes of operation or "work around" procedured indicated in the ACTION entry in order to mitigate the failure effect.

For purposes of assigning Failure Categories in the FMEA, the following definitions of mission objectives were used:

PRIMARY MISSION OBJECTIVES:

The Airlock Module functions as necessary to support:

- Planned duration of all habitation phases (28 days, 56 days and 56 days)

- o Revisitation after orbital storage.
- o Planned two-man EVA's.
- o ATM Experiments
- o Biomedical Experiments
- o Earth Resources Experiments[1].

SECONDARY MISSION OBJECTIVES:

The Airlock Module functions as necessary to support:

- o Obtain data for evaluating the performance of the OA.
- o Obtain data for evaluating astronaut mobility and work capability in both EVA and IVA.
- o Obtain medical data for determining effects on crew of planned duration mission.
- o DOD & NASA experiments (individually).

J. RECOMMENDATIONS

This column contains recommended design changes, fault isolation capability, checkout and operational procedures; particularly in regard to those single failures which could adversely affect crew safety or primary mission objectives.

1. For a failure associated with experiments to be classed as Category II the failure must result in total loss of an experiment group (eg loss all ATM Experiments.

III SUBSYSTEM SUCCESS CRITERIA:

Analysis of individual subsystems has been based on the following general criteria for determining AM mission success.

- o ELECTRICAL POWER - At least 6 of 8 power conditioning groups must function throughout the mission to provide minimum required power.
- o COMMUNICATIONS - At least one of two hardlines for voice communications and the emergency parameters of the Caution and Warning system are required during manned phases. At least one of two DCS/CRDU's is required during all orbital storage phases to control subsystems and determine systems status. The Quadriplexer and either one of the two Discone Antennas or the XMTR/RCVR Stub Antenna, are required to provide transmission of telemetered data. The Digital Command System requires either the antenna system for telemetered data or the RCVR/UHF Stub Antenna.
- o INSTRUMENTATION - At least one of three DC-DC converters, one of two PCM programmers, and one of four TM transmitters are required during all orbital storage phases to provide sufficient status information to permit revisitation. TM backs up "on board" indicators during manned phases.
- o ENVIRONMENTAL CONTROL - At least five of six O_2 tanks and at least five of six N_2 tanks are required for mission completion. Manual or DCS control backs up automatic O_2/N_2 control. At least one of two molecular sieves must function. Seven of ten circulation fans and two of five compressors must function (two spare fans and one compressor are provided). One of two condensate dump system modules must function. At least two of six coolant pumps must function throughout all manned phases and at least one of six must function during orbital storage

periods. During all mission phases at least one of the two coolant loops must function. At least one of two suit cooling loops must function to support EVA. ATM C&D panel cooling is required during ATM operation. At least one of three H_2O pumps must function for panel cooling. (However, two of three pumps must be available for life limit considerations).

- o LIGHTING - AM must provide sufficient lighting to support Rendezvous, Docking/Station Keeping, Workshop and EVA/IVA activities whether by NORMAL or Emergency Lighting modes.
- o EXPERIMENTS - AM must furnish mounting provisions and electrical power to support the conduct of experiments for primary and secondary mission objectives (See paragraph II-I.).
- o MECHANICAL DEVICES - All hatches must operate as required. Deployment of one of two discone antennas is required. ATM deployment assembly must deploy and rigidize ATM.
- o PAYLOAD SHROUD - All four shroud segments must separate and at least one of two latch actuators at each of eight tension straps must function for mission success.

IV CONFIGURATION ANALYZED

This Airlock Module FMEA was performed on a functional subsystem basis generally using released system design configuration as of 7 May 1971 as a baseline. The specific configuration of the subsystems analyzed is defined by the drawings listed on Table IV-1, Drawings Used For Analysis.

TABLE IV-1

DRAWINGS USED FOR ANALYSIS

SUBSYSTEM	DRAWING USED	DRAWING CURRENT ISSUE
1.0 ELECTRICAL POWER	61J760051 REV M	SAME
	61J760001 REV S	SAME
2.0 COMMUNICATIONS	61J760031 REV M	SAME
	61J760021 REV E	SAME
	61A850003 REV D	SAME
3.0 INSTRUMENTATION	61J760021 REV L	SAME
	61J760026 REV E	SAME
4.0 ENVIRONMENTAL CONTROL	61J830008 REV D	SAME
	61J760011 REV R	SAME
5.0 LIGHTING	61J760041 REV R	SAME
6.0 EXPERIMENTS	61J760061 REV J	SAME
7.0 MECHANICAL DEVICES	61A370001 No Change	SAME
	61A350005 No Change	SAME
	61A350001 REV A	SAME
	61C840000 REV A	SAME
	61A840000 REV A	SAME
	61A310100 REV C	SAME
	61A330040 No Change	SAME
	61B330003 REV B	SAME
	61C330001 REV A	SAME
	61A330033 No Change	SAME
	61C840001 No Change	SAME
	61A310165 No Change	SAME
	61A310170 No Change	SAME
8.0 CREW CONTROLS	23 April 1971 Layout	

TABLE IV-1 (CONTINUED)

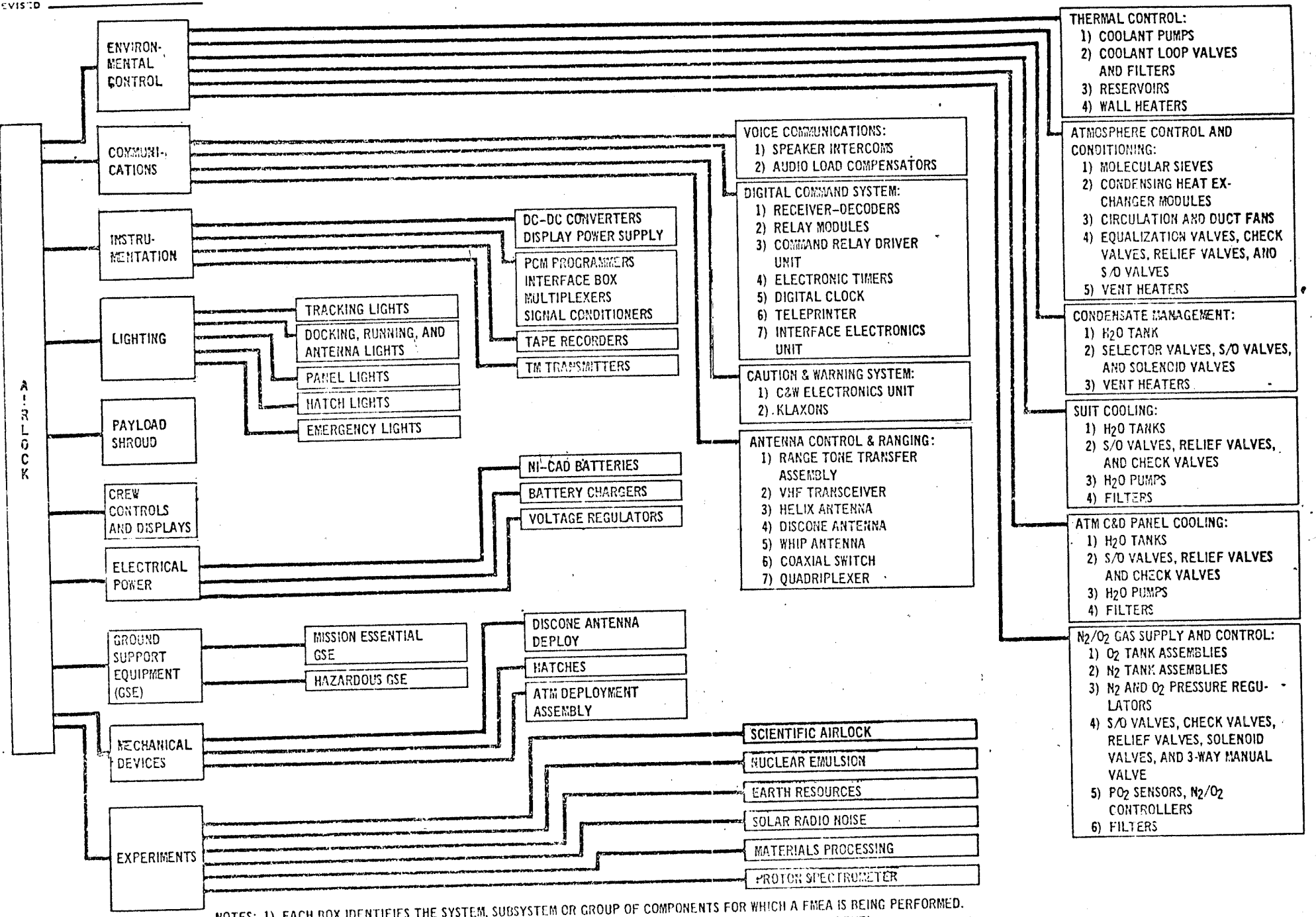
DRAWINGS USED FOR ANALYSIS

SUBSYSTEM	DRAWING USED	DRAWING CURRENT ISSUE
9.0 PAYLOAD SHROUD	1B82585-1 No Change	SAME
	1D15754-1 No Change	SAME
	1D15754-2 No Change	SAME
	1D15754-501 No Change	SAME
	1D15754-502 No Change	SAME
	1B80683-1 No Change	SAME
	1D15752-1 No Change	SAME
	1D15710-1 No Change	SAME
	1D15820-1 No Change	SAME
	1B82675-1 No Change	SAME
	7865742 No Change	SAME
	1B82959-1 No Change	SAME
	1B82585-1 No Change	SAME
	1B80876-1 No Change	SAME
	40M39515-115 REV B	SAME
10.0 MISCELLANEOUS COMPONENTS	61J760091 REV B	SAME
	61J760211 REV D	SAME
11.0 GROUND SUPPORT EQUIP.	Per 61E00000 REV J	SAME

Appendix A contains a list of components excluded form the analysis and, where appropriate, presents system-peculiar assumptions relating to inclusion/exclusion of components. Except where noted the list of components excluded enumerates (1) those components whose failures are undetectable by crew or ground and have no effect on system performance, mission continuation, or crew safety, (2) those components which serve as standby units and their associated components that are in a standby status during the mission and (3) Airborne CFE used solely for ground testing.

An FMEA "tree" which depicts the systems, subsystems, and major equipment for which the FMEA was performed is shown on page IV-3.

FAILURE MODE AND EFFECT ANALYSIS TREE



NOTES: 1) EACH BOX IDENTIFIES THE SYSTEM, SUBSYSTEM OR GROUP OF COMPONENTS FOR WHICH A FMEA IS BEING PERFORMED. ALL SUBSYSTEMS AND MODULES ARE ANALYZED TO THE BLACK BOX OR DISCRETE COMPONENT LEVEL.

2) CERTAIN COMPONENTS USED COMMONLY IN ALL SYSTEMS, e.g., CIRCUIT BREAKERS, SWITCHES, RELAYS, SENSORS, AND [illegible] ARE NOT LISTED ABOVE, BUT ARE ANALYZED IN THE FMEA.

V ANALYSIS OF SECOND FAILURES

At the end of each subsystem section in the FEMA is included an analysis of second failures of components of that subsystem for conditions where the initial failure is not detectable by the crew and ground.

A. Purpose and Scope

The purpose of expanding the FMEA to include selected second failures is to identify and recommend corrective actions as necessary for those dual failures which can have an adverse effect on crew safety or on the accomplishment of mission objectives as a consequence of a second failure occurring after an initial undetectable failure. The intent was to perform this analysis without investigating a multitude of dual failure combinations which would require an extensive effort and prevent the timely accomplishment of the analysis purpose with little, if any, compensating benefit. Accordingly, the scope of the analysis has been limited to:

- o AM airborne contractor furnished equipment (CFE) that is used during the flight phase of the mission.
- o Second failures of components within the same subsystem which provide identical, similar or interdependent functions.

B. Ground Rules

a. In general, the ground rules given in paragraph II are also applicable to the FMEA of second failures with the exception that the effect of a second failure is analyzed where the initial failure is not detectable.

b. The second failures are classified using the same failure category definitions presented in paragraph II with notation of applicability to the dual failure. Category I and II dual failures so listed will not be included in the Single Failure Point Group of the Critical Item List.

c. Where primary and standby backup modes of operation are available, the first failure is assumed to have occurred in the primary mode and failure in the backup mode will be analyzed as the second failure.

d. Simultaneously activated redundant components associated with one-time mission events of a sequential or pyrotechnic nature (e.g., Discone antenna and ATM deployment, payload shroud jettison, and miscellaneous experiment deployments/activations) are not included in the expanded analysis.

e. The "open" failure mode of suppression diodes is excluded from the analysis because the function of the associated component (e.g. relay, solenoid) is not impaired by this failure mode and because the combined effect of an "open" diode and another component as a second failure is likely to be no different than the effect of the same second failure occurring alone. The purpose of the suppression diodes is to minimize the creation of noise which can adversely affect the functioning of other equipment. The manner and degree in which the operation of other equipment is affected by one or more suppression diode failures is variable and is indeterminable by analysis.

f. The analysis of second failures is presented in the same format as that used for single failures with one change. The first (undetectable) failure is given under the heading "FIRST FAILURE" followed with the second failures considered in conjunction with that first failure listed under the heading "SECOND FAILURE(S)".

VI ACRONYMS AND ABBREVIATIONS

A list of abbreviations and acronyms commonly used on the Airlock Program and in this FMEA are presented following.

A/C	Air Conditioning
ACE	Automatic Checkout Equipment (For Spacecraft)
ACQ	Acquisition
ACS	Attitude Control System
A/D	Analog to Digital
AGC	Automatic Gain Control
ALSA	Astronaut Life Support Assembly
AM	Airlock Module
AMCR	Air Material Command Regulation
AMPS	Amperes
AMS	Airlock Module Station
ANT	Antenna
ASC-II	American Standard Code For Information Interchange
ATM	Apollo Telescope Mount
AVC	Automatic Volume Control
B/L	Bilevel
BLP	Bilevel Pulse
BTU	British Thermal Unit
BU	Backup
C/B	Circuit Breaker
CBRM	Charger-Battery-Regulator Module (ATM)
CCU	Crewman Communication Umbilical
CCW	Counterclockwise
C&D	Control And Display
CDF	Confined Detonating Fuse
CEI	Contract End Item
CFE	Contractor Furnished Equipment
cfm	Cubic Feet Per Minute
CHX	Condensing Heat Exchanger
℄	Centerline
CLT	Cargo Life Trailer
CM	Command Module
CMD	Command
CMG	Control Moment Gyro
CNST	Canister
CNTL	Control
CO_2	Carbon Dioxide
CHX	Condensing Heat Exchanger
Compt.	Compartment
CONV	Converter
C/P	Cold Plate
CRDU	Command Relay Driver Unit
CRT	Cathode Ray Tube
CS	Command System
CSM	Command And Service Module
CW	Clockwise
C&W	Caution And Warning

ACRONYMS AND ABBREVIATIONS (CONTINUED)

DC	Direct Current
DCS	Digital Command System
DECR	Decrease
DO24	Thermal Control Coatings
D/P	Docking Port
DTS	Data Transmission System
EBW	Explosive Bridgewire
ECS	Environmental Control System
Elect.	Electrical (or Electronic)
E/M	Electrical Module
EMER	Emergency
EMI	Electromagnetic Interference
EOP	Emergency Oxygen Pack
EPS	Electrical Power System
EREP	Earth Resources Experiment Package
ESE	Electrical Support Equipment
etc	And So Forth
EVA	Extravehicular Activity
E&W	Emergency And Warning
Exp.	Experiment
FAS	Fixed Airlock Shroud
FWD	Forward
GCE	Gemini Cape Engineering
GFE	Government Furnished Equipment
GN_2	Gaseous Nitrogen
GSE	Ground Support Equipment
H_2O	Water
H/L	High Level
Hx	Heat Exchanger
Hz	Hertz (Cycles Per Second)
I/B	PCM Interface Box
I&C	Instrumentation And Communication
ICD	Interface Control Document
ICOM	Intercom
ID	Inside Diameter
IDD	Interface Definition Document
IEU	Interface Electronics Unit
I/F	Interface
ILC	International Latex Corporation
INCR	Increase
INTER	Interrupter
ITMG	Integrated Thermal Meteroid Garment
IU	Instrument Unit
IVA	Intervehicular Activity
KBPS	Kilobits Per Second
KHz	Kilo Hertz (Kilocycles)
KSC	Kennedy Space Center

ACRONYMS AND ABBREVIATIONS (CONTINUED)

LC	Launch Complex
LCC	Launch Control Center
LCG	Liquid-Cooled Garment
L/L	Low Level
LM	Lunar Module
LSB	Least Significant Bit
LUT	Launch Umbilical Tower
LV	Launch Vehicle
M 509	Astronaut Maneuvering Unit
MAN	Manual
MAX	Maximum
MCE	Mercury Cape Engineering
MDA	Multiple Docking Adapter
MDAC-E	McDonnell Douglas Astronautics Company, East
MDAC-W	McDonnell Douglas Astronautics Company, West
MDF	Mild Detonating Fuse
MF	Master Frame
MHz	Mega Hertz
MIL-STD	Military Standard
MIN	Minimum
MIN	Minute
ML	Mobile Launch
mm	Millimeter
MMHg	Millimeters of Mercury
MMH	Monomethylhydrazine
MMS	McDonnell Material Specifications
MOLE	Molecular
MSCM	Manned Spacecraft Center Manual
MSFC	Marshall Space Flight Center
MSFN	Manned Space Flight Network
MSOB	Manned Spacecraft Operations Building
MUX	Multiplexer
MV	Millivolts
NAR	North American Rockwell
NiCad	Nickel Cadmium
NM	Nautical Mile(s)
NMT	Not More Than
N_2	Nitrogen
No.	Number
NPC	NASA Publication Control
NRZ	Nonreturn to Zero
NRZS	Nonreturn to Zero Space
O_2	Oxygen
OA	Orbital Assembly
OD	Outside Diameter
OV	Orbital Vehicle
OWS	Orbital Workshop

ACRONYMS AND ABBREVIATIONS (CONTINUED)

PB	Playback
PCG	Power Conditioning Group
PCM	Pulse Code Modulation
PCU	Pressure Control Unit
Pgmr	PCM Programmer
PLV	Postlanding Ventilation
$PPCO_2$	Partial Pressure Carbon Dioxide
PPO_2	Partial Pressure Oxygen
PRI	Primary
PS	Payload Shroud
PS	Process Specification
PSI	Pounds Per Square Inch
PSIA	Pounds Per Square Inch Absolute
PSID	Pounds Per Square Inch Differential
PSIG	Pounds Per Square Inch Gauge
PTS	Points
PTT	Push/Press-To-Talk (Or Push/Press-To-Transmit)
PWR	Power
QA	Quality Assurance
QAP	Quality Assurance Procedure
QLDS	Quick Look Data Station
RCDR	Recorder
RCV (RCVR)	Receive/Receiver
REG	Regulator (Or Regulated)
RF	Radio Frequency
RLY	Relay
R/T	Real Time
RTTA	Range Tone Transfer Assembly
RZ	Return To Zero
SA OAT	Swing Arm Over All Test
SAS	Solar Array System
SCD	Source (Specification) Control Drawing
SEC	Secondary (Or Second)
SEDR	Service Engineering Department Report
SF	Subframe
SG	Super Guppy
SIM	Simulator
SL	Skylab
SLA	Spacecraft Lunar Module Adapter
SM	Service Module
S/O	Shutoff
SOS	Supplemental Oxygen System
SOW	Statement of Work
SPF	Single Point Failure
SPS	Samples Per Second
S/R	Slow Release
STS	Structure Transition Section
SV	Space Vehicle
SWS	Saturn Workshop (PS/MDA/ATM/AM/OWS/IU/ ATM Deployment Assembly)
SYS	System

ACRONYMS AND ABBREVIATIONS (CONTINUED)

TACS	Thruster Attitude Control System (OWS)
TBD	To Be Determined
TCS	Thermal Control System
TM (T/M)	Telemetry
Tr	Time-To-Retrograde
T/R	Tape Recorder
TV	Television
Tx	Time-To-Go Equipment Reset
UHF	Ultra High Frequency (Radio Frequency Subdivision)
UMB	Umbilical
UTIL	Utility
V-1	Voice 1
VAB	Vehicle Assembly Building
VCO	Voltage Control Oscillator
VDC	Volts Direct Current
VHF	Very-High Frequency
VS	Vehicle Station
WITS	West Integrated Test Stand
XMTR	Transmitter
P	Differential Pressure
°F	Degrees Fahrenheit

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Battery, Nickel Cadimum. 1 thru 8 61B769004-9 (any 1 of 8) 1.1.01 1.1.02 1.1.03 1.1.04 1.1.05 1.1.06 1.1.07 1.1.08	L	a) Loss of output.	a) None due to active redundant PCG's capability of supplying launch phase power requirements.	a) N/A	a) T/M indicates reduced level of associated battery voltage and/or absence of current drain.	a) N/A	---
		b) Internal short circuit or open due to launch environment.	b) None, possible change in subsequent mission profile during periods of darkness.	b) N/A	b) After OWS array is deployed, isolate failed battery and attempt to recharge. If data indicates battery cannot be recharged, isolate the battery and manage EPS to allow for the loss of one battery.	b) IIIa	
Provides Bus Power During Dark Orbital Periods.	M S	a) Loss of output.	a) Degraded ability to provide power during periods of darkness.	a) Instrumentation indicates reduction in battery voltage and/or absence of current drain from battery.	a) T/M data indicates condition described in crew indication.	a) N/A	---
		b) Internal short.	b) Possible change in mission activities to reduce dark period requirements.	b) Perform real time EPS evaluation. Manage EPS to allow for loss of one battery.	b) Support crew management of EPS with T/M data. Coordinate with crew on possible mission change.	b) IIIa	
Voltage Regulator 1 thru 8 61B769005-3 (any 1 of 8) 1.1.09 1.1.10 1.1.11 1.1.12 1.1.13 1.1.14 1.1.15 1.1.16	L	a) Loss of regulator output.	a) None due to active redundant PCG's capability to supply launch power requirements.	a) N/A	a) T/M indicates reduced current drain from associated battery during dark periods and a reduction in current from the associated solar array during daylight periods.	a) N/A	---
		b) Internal short circuit due to launch environment.	b) None	b) N/A	b) Identify failed regulator and isolate its PCG. Manage EPS to allow for loss of one PCG.	b) IIIa	
Regulates Voltage from the Ni Cd Battery or Solar Array to the Reg. Bus	M S	a) Loss of regulator output	a) Degraded ability to provide electrical power due to loss of one PCG.	a) Associated battery's ammeter indicates reduced current drain during dark periods, associated solar array's ammeter indicate a reduction in output current during daylight periods, adjustment of associated fine adjustment potentiometer does not restore currents to their normal values.	a) T/M indicates reduced current drain from associated battery during dark periods and a reduction in current from the associated solar array during daylight periods.	a) N/A	---
		b) Defective component due to mechanical or thermal stress.	b) Possible change in mission activities to reduce power requirements.	b) Perform real time EPS evaluation and manage EPS to allow for loss of one PCG.	b) Support crew management of EPS with T/M data. Coordinate with crew on possible mission change.	b) IIIa	

DATE 30 October 1970
REVISED 31 August 1971
REVISED

SYSTEM: Elec. Power
SUBSYSTEM: Batteries, Chargers, and Regulators

McDONNELL
ST. LOUIS, MISSOURI

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Battery, Nickel Cadimum 1 thru 8 61B769004 1.1.01 1.1.02 1.1.03 1.1.04 1.1.05 1.1.06 1.1.07 1.1.08	M S	a) Battery case Vent Valve fails closed.	a) None, "O" ring seal will provide secondary relief path in the event of excessive pressure.	a) None, valve is not monitored for relief or closure.	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) II	RID E-2 directs a Category II. This is not considered a Single Point Failure since: o The "O" Ring seal will provide a secondary relief path in the event of excessive pressure. o Failure mode categorization is based on sub-system success criteria stated on page II-7 i.e. at lease six of eight PCG's (batteries) are required for mission success. o Power is also available from the ATM. o Before the battery case vent valve operates multiple cell failures must have occurred.

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIO
Battery Charger 1 thru 8 61B769006-5 (any 1 of 8) 1.1.16 1.1.17 1.1.18 1.1.19 1.1.20 1.1.21 1.1.22 1.1.23 Controls the Output of the Regulator so that the Combined Requirements of the Load and Battery Charging do not exceed the Power Available from the Solar Array.	L	a) Loss of regulated output.	a) None due to redundant PCG's capability of supplying launch power.	a) N/A	a) T/M readout of associated battery's state of charge indicates battery is not being charged and/or readout of associated solar array ammeter indicates absence of current from solar array.	a) N/A	---
		b) Internal short circuit due to launch environment.	b) None	b) N/A	b) Identify failed battery charger and isolate it and its associated battery from the rest of the system. Manage EPS to allow for loss of battery charger and battery.	b) IIIA	
		a) Primary amp-hour meter inoperative.	a) Loss of correct T/M indication of the associated battery's state of charge.	a) N/A	a) T/M data indicates no change in associated battery's state of charge while the battery current readout indicates normal charging and/or discharging cycles are occurring.	a) N/A	---
		b) Internal or external short circuit due to launch environment.	b) None, secondary amp-hour meter in inactive standby.	b) N/A	b) Transfer to secondary amp-hour meter.	b) IIIb	
	M S	a) Primary amp-hour meter inoperative.	a) Loss of correct T/M indication of the associated battery's state of charge.	a) Associated battery's ammeter indicates either that the battery is limited to a 2 amp charge rate when it should be in the "voltage limited charge rate mode" or that the battery never goes into the 2 amp charge rate mode when conditions indicate that is should.	a) If amp-hour meter fails to measure battery current, T/M data indicates no charge in associated battery's state of charge while battery current readout indicates normal charging and discharging cycles are occurring.	a) N/A	---
		b) Defective component due to mechanical or thermal stress.	b) None, secondary amp-hour meter is in inactive standby.	b) When informed by ground of switch to secondary amp-hour meter, manage EPS to cause secondary amp-hour meter to indicate correct state of charge of associated battery.	b) Switch to secondary amp-hour meter and support crew management of EPS with T/M data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Battery Charger 1 thru 8 61B769006-5 (any 1 of 8) (Continued)		a) Loss of regulated output	a) Degraded ability to provide power during dark periods due the loss of battery charger and battery.	a) Associated battery's ammeter indicates that battery is not being charged and/or associated array ammeter indicates absence of output current from array.	a) T/M readout of affected battery's state of charge does not increase during charge cycle.	a) N/A	---
		b) Defective component due to mechanical or thermal stress.	b) Possible change in mission activities to reduce power requirements.	b) Perform real time EPS evaluation. Manage EPS to allow for loss of one battery charger and one battery.	b) Support crew management of EPS with T/M data. Coordinate with crew on possible mission change.	b) IIIA	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary "Solar Array Output" 1 Thru 8 52-79705-109 (Any 1 of 8)	M	a) Contact set 2,1 fails to make contact in PCG 2 position.	a) Affected Solar Array Group Output cannot be transferred manually from the normal PCG to the alternate PCG.	a) When the Solar Array Output Switch is placed in "PCG 2" position the Solar Array Output Status Light will not change from green to amber.	a) T/M indicates that transfer from normal to alternate PCG does not take place.	a) N/A	---
1.2.01 1.2.02 1.2.03 1.2.04 1.2.05		b) Contamination	b) None. DCS backs up the switch function.	b) Switch Bus Power System control to "CMD" and request ground to perform transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIb	
1.2.06 1.2.07 1.2.08 Transfers Solar Array Output from Normal PCG to Alternate PCG.		a) Contact set 2,3 fails to make contact in the PCG 1 position.	a) Affected Solar Group Output cannot be transferred from the alternate PCG back to the normal PCG.	a) When the Solar Array Output Switch is placed in "PCG 1" position the Solar Array Output Status Light will not change from amber to green.	a) T/M indicates that transfer from alternate PCG to normal PCG does not take place.	a) N/A	---
		b) Contamination	b) None. DCS backs up the switch function.	b) Switch Bus Power System Control to "CMD" and request ground to perform transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIb	
Relay, Latching, "Solar Array Output Power" (K6-1,-15,-29,-43, -57,-71,-85,-99) 52-79713-13 (Any 1 of 8)	L M S	a) Latch coil fails open.	a) Affected Solar Array Group Output cannot be transferred from the normal PCG to the alternate PCG.	a) When the Solar Array Output Switch is placed in position "PCG 2" the Solar Array Output Status Light will not change from green to amber. In addition, Array Ammeter drops to zero.	a) T/M indicates that affected Solar Array Group Output was not transferred.	a) N/A	---
1.2.09 1.2.10 1.2.11 1.2.12 1.2.13 1.2.14		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Function is required only in the event of prior failure of normal PCG.	b) Coordinate with ground and position "Solar Array Output Switch" back to "PCG 1" position.	b) Maintain system surveillance and supply data at crew request.	b) IIIb	
1.2.15 1.2.16 Transfers Solar Array Output.		a) Pole A or Pole B fails open in latch position.	a) Affected Solar Array Group Output cannot be transferred from the normal PCG to the alternate PCG.	a) When the Solar Array Output Switch is placed in position "PCG 2" the Solar Array Output Status Light will not change from green to amber. In addition, Array Ammeter drops to zero.	a) T/M indicates that affected Solar Array Group Output was not transferred.	a) N/A	---
		b) Contamination	b) None. Function is required only in the event of prior failure of normal PCG.	b) Coordinate with ground and position "Solar Array Output Switch" back to "PCG 1" position.	b) Maintain system surveillance and supply data at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Solar Array Output Power" (K6-1,-15,-29,-43, -57,-71,-85,-99) 52-79713-13 (Any 1 of 8) (Continued)		a) Pole C fails open in the latch position.	a) Loss of associated Solar Array Output PCG Status Light.	a) When relay is latched, the green Solar Array Output Status Light extinguishes, the amber Solar Array Output Status Light does not illuminate. Both lights on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of transfer status.	b) Confirm that affected Array Group Output was transferred to the alternate PCG.	b) IIIb	
		a) Pole D fails open in the latch position.	a) None. T/M monitor, no effect in latch position.	a) None	a) None	a) N/A	---
		b) Contamination Pole E used for GSE only - no effect.	b) None	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Affected Solar Array Group Output cannot be transferred from the alternate PCG back to the normal PCG.	a) When the Solar Array Output Switch is placed in "PCG 1" position the Solar Array Output Status Light will not change from amber to green.	a) T/M indicates that transfer from alternate PCG to normal PCG does not take place.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to Alternate Solar Array switching capabilities.	b) 1. Switch Bus Power System Control to "CMD" and request ground to attempt transfer via DCS. 2. Utilize Alternate Solar array Output if necessary.	b) None	b) IIIb	
		a) Pole A or Pole B fails open in reset position.	a) Affected Solar Array Group Output cannot be transferred from the alternate PCG back to the normal PCG.	a) Array ammeter indicates zero.	a) T/M indicates zero current from solar array.	a) N/A	---
		b) Contamination	b) None, due to Alternate Solar Array switching capabilities.	b) Coordinate with ground and position "Solar Array Output Switch" back to "PCG 2" position.	b) Maintain system surveillance.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Solar Array Output Power: (K6-1,-15,-29,-43, -57,-71,-85,-99) 52-79713-13 (Any 1 of 8) (Continued)		a) Pole C fails open in the reset position.	a) Loss of associated Solar Array Output PCG Status Light.	a) When the Solar Array Output Switch is placed in "PCG 1" position the Solar Array Output Status Light will not change from amber to green.	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by T/M.	b) Obtain ground indication of transfer status.	b) Confirm that affected Array Group Output was transferred to the normal PCG.	b) IIIb	
		a) Pole D fails open in the reset position.	a) Loss of ground indication of "Solar Array Output Power Relay."	a) None	a) T/M indicates that transfer from alternate PCG to normal PCG did not take place.	a) N/A	---
		b) Contamination	b) None due to redundant voltage monitoring capability provided by T/M.	b) None	b) Utilize redundant monitor and request crew indication of transfer status.	b) IIIb	
Switch, Momentary, "CHARGER" 1 Thru 8 52-79705-109 (Any 1 of 8)	M	a) Contact Set 2,1 fails open. (Bypass)	a) Affected Battery Charger cannot be manually bypassed.	a) When the Charger Switch is placed in the "Bypass" position the associated Charger Status Light does not change from green to amber.	a) T/M data indicates that associated Charger was not bypassed.	a) N/A	---
1.2.17 1.2.18 1.2.19 1.2.20 1.2.21 1.2.22 1.2.23 1.2.24		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power System Control to "CMD" and request ground to perform transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIb	
Allows Battery Charger to be bypassed.		a) Contact Set 2,3 fails open. (Normal)	a) Cannot manually transfer associated battery charger from "Bypassed" to "Normal."	a) When the "Charger Switch" is placed in the "Normal" position the associated "Charger Status Light" does not change from amber to green.	a) T/M data indicates that associated charger was not transferred to normal.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power System Control to CMD and Request Ground to perform transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIb	

DATE 10 July 1970
REVISED 31 August 1971
REVISED

SYSTEM: Elec. Power
SUBSYSTEM: Power Distribution and Management

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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "Charger Bypass Power" (K6-134,-135, -136,-137,-138, -139,-140,-141) 52-79713-13 (Any 1 of 8) 1.2.25 1.2.26 1.2.27 1.2.28 1.2.29 1.2.30 1.2.31 1.2.32	L M S	a) Latch coil fails open.	a) Affected Battery Charger cannot be bypassed.	a) When "Charger" Switch is placed in Bypass position. The Associated Charger Status Light does not change from green to amber.	a) T/M indicates that Associated Charger was not bypassed.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. or a) Pole A or Pole B fails open. b) Contamination	b) None. Function is required only in the event of prior failure.	b) Switch Bus Power System Control to "CMD" and request ground to attempt function via DCS.	b) Attempt function via DCS at Crew Request.	b) IIIb	
		a) Pole C fails open.	a) Loss of Associated Charger Status Light.	a) When relay is latched, green "Charger Norm Status Light" extinguishes, but amber "Charger Bypass Status Light" does not illuminate. Both lights on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None. Due to redundancy provided by T/M.	b) Obtain ground indication of Charger Bypass status.	b) Confirm that affected Battery Charger was bypassed.	b) IIIb	
		a) Pole D fails open in the latch position.	a) None. T/M monitor, no effect in latch position.	a) None	a) None	a) N/A	---
		b) Contamination Pole E used for GSE only - no effect.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "Charger Bypass Power" (K6-134,-135, -136,-137,-138, -139,-140,-141) 52-79713-13 (Any 1 of 8) (Continued)		a) Reset coil fails open.	a) Cannot transfer associated charger from "Bypass" to "Normal" (charger cannot be utilized to charge the affected PCG battery).	a) Associated "Charger Status Light" does not change from amber to green.	a) T/M indicates that the affected charger was not transferred from "Bypass" to "Normal."	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. or a) Pole A or Pole B fails open. b) Contamination	b) None. Six of eight PCG's are sufficient for mission success.	b) None	b) None	b) IIIb	
		a) Pole C fails open (reset position).	a) Loss of Associated Charger Status Light.	a) When the "Charger Switch" is placed in the "Normal" position the associated "Charger Status Light" does not change from amber to green.	a) None	a) N/A	---
		b) Contamination	b) None. Due to redundancy provided by T/M.	b) Obtain ground indication of Bypass status.	b) None	b) IIIb	
		a) Pole D fails open (reset position).	a) Loss of T/M readout of relay status.	a) None	a) T/M indicates that transfer from "Bypass" to "Normal" was not accomplished.	a) N/A	---
		b) Contamination	b) None due to T/M readout capability of amp-hour meter.	b) None	b) Monitor T/M indication of affected PCG's battery amp-hour meter for charge increase during daylight portion of orbit.	b) IIIb	

* COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary, "Charge Mode". (1 thru 8) 52-79705-109 (any 1 of 8) Allows battery to be charged in the voltage limited mode. 1.2.578 thru 1.2.585	M	a) Contact set 2,1 fails open in "TEMP LIMIT" position.	a) Associated battery charger will not change to the "TEMP LIMIT" charge mode.	a) Amber "Charge Mode auto status light" does not illuminate. Green "Charge mode temp limit status light" does not extinguish.	a) T/M indication of associated batteries current, does not indicate an increase. (Dependent on battery SOC at time of attempted transfer).	a) N/A	- - -
		b) Contamination	b) Slight Loss of Associated EPS management capability.	b) None	b) None	b) III b	
		a) Contact set 2,3 fails open in "auto" position.	a) Associated battery charger will not change to the "Auto mode.	a) The amber "charge mode temp limit status light" does not extinguish - Green "charge mode auto status light" does not illuminate.	a) T/M indicates that associated battery charger does not charge to a current limited mode of operation.	a) N/A	- - -
		b) Contamination	b) None - The associated battery will continue to charge in the temperature limited mode.	b) None	b) None	b) III b	
Relay, Latching "Charge Mode". K6-273, -274, -275, -276, -277, -278, -279, -280 52-79703-45 (Any 1 of 8) 1.2.586 thru 1.2.593		a) Latch coil fails open	a) associated battery charger will not change to the "Temp limit" charge mode of operation.	a) Amber "Charge Mode Auto Status Light" does not illuminate. Green "charge mode temp limit status light" does not extinguish.	a) T/M indication of associated batteries current does not indicate an increase. (Dependent on battery SOC at time of attempted transfer).	a) N/A	- - -
		b) Defective terminal of wire subjected to mechanical or thermal stress.	b) Slight loss of associated EPS management capability.	b) Monitor associated Amp Hour meters for 100 per cent state of charge indication.	b) Maintain system surveillance.	b) III b	
		a) Pole D fails open in latch position	a) None, no effect in latch position.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
		a) Pole C fails open.	a) Loss of associated charge mode status light.	a) When relay is latched, Green "Charge mode auto status light" extinguishes, but amber "charge mode temp limit status light" does not illuminate.	a) None	a) N/A	- - -
		b) Contamination	b) None - Due to redundancy provided by T/M	b) Obtain ground Indication of "Charge Mode" relay Status.	b) Provide Requested information.	b) III b	- - -

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Charge Mode" K6-273, -274, -275, -276, -277, -278, -279, -280 (continued)	M	a) Reset coil fails open	a) Associated battery charger will not change to the "Auto mode" of operation.	a) Amber "Charge mode temp limit status light" does not extinguish Green "Charge mode auto status light" does not illuminate.	a) T/M indicates that associated battery charger does not change to a current limited mode of operation.	a) N/A	- - -
1.2.586 thru 1.2.593		b) Defective terminal or wire subjected to mechanical or thermal stress	b) None - The associated battery charger will continue to charge in the temperature limited mode.	b) None	b) None	b) III b	
		a) Pole B fails open in the reset position.	a) T/M indicates that the associated battery charger is still in the "Temp Limit" mode of operation.	a) None	a) T/M indicates that the associated battery charger is still in the "Temp Limit" mode of operation.	a) N/A	- - -
		b) Contamination	b) None	b) None	b) Maintain system surveillance.	b) III b	
		a) Pole C fails open in the reset position.	a) Loss of visual indication of battery charger mode of operation	a) Amber "charge mode temp limit status light" extinguishes. Green "Charge mode auto status light" does not illuminate.	a) None	a) N/A	- - -
		b) Contamination	b) None	b) Request ground indication of "Charge mode status".	b) Provide requested information	b) III b	
		a) Pole D fails open in the reset position.	a) Associated battery charger will not change to the "Auto mode" of operation.	a) None	a) T/M indicates that associated battery charger does not change to a current limited mode of operation.	a) N/A	- - -
		b) Contamination	b) None - The associated battery charger will continue to charge in the temperature limited mode.	b) None	b) None	b) III b	- - -
Switch, Momentary, "CHARGE RATE" (1 thru 8) 52-79705-109 (any 1 of 8)	M S	a) Contact Set 2,1 fails open in the "LO" position.	a) Associated Battery cannot be manually placed in the current limited charge mode.	a) When the "Charge Rate" switch is placed in the "LO" position, the appropriate Status Light does not change from green to amber.	a) T/M indicates that the associated Battery was not placed in the current limited charge mode.	a) N/A	- - -
1.2.33 1.2.34 1.2.35 1.2.36 1.2.37 1.2.38 1.2.39 1.2.40		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power System Control to "CMD" and request ground to perform transfer via DCS.	b) Perform function via DCS at crew request.	b) IIIb	

* COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary, "CHARGE RATE" (1 Thru 8) 52-79705-73 (Any 1 of 8) (Continued)		a) Contact Set 2,3 fails open in the "AUTO" position.	a) Associated battery cannot be manually returned to the "AUTO" charge mode.	a) When the "Charge Rate" switch is placed in the "AUTO" position the "Charge Rate" Status Light does not change from amber to green.	a) T/M indicates that the associated battery was not placed in the "AUTO" charge mode.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power System Control to "CMD" and request ground to perform transfer via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
Relay, Latching, "Charge Rate Control" (K6-142,-143-144, -145,-146,-147, -148,-149) 52-79703-45 (Any 1 of 8) 1.2.41 1.2.42 1.2.43 1.2.44 1.2.45 1.2.46 1.2.47 1.2.48	L M S	a) Latch coil fails open.	a) Loss of capability to charge associated battery in "LO" mode.	a) When Charge Rate Switch is placed in "LO" position, Associated Status Light does not change from green to amber.	a) T/M indicates that the Associated Battery was not placed in the "LO" Charge Mode.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Function is required only in the event of prior failure.	b) Switch Bus Power System Control to "CMD" and request ground to attempt Charge Mode change via DCS.	b) Attempt function via DCS at crew request.	b) IIIb	
		a) Pole B fails open in the latch position.	a) None. T/M monitor, no effect in latch position.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Pole C fails open in the latch position.	a) Loss of visual indication of "Charge Rate" status.	a) When relay is latched, Green Status Light extinguishes but Amber Status Light does not illuminate.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of Charge Rate Function.	b) Confirm Charge Rate change.	b) IIIb	
		a) Pole D fails open in the latch position.	a) None. No effect in latch position.	a) None	a) None	a) N/A	---
		b) Contamination Pole A used for GSE only. No effect.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Charge Rate Control" (K6-142,-143, -144,-145,-146, -147,-148,-149) 52-79703-45 (Any 1 of 8) (Continued)		a) Reset coil fails open.	a) Loss of capability to return battery charge rate to AUTO.	a) Associated battery continues to charge at the LOW rate. In addition, green "CHARGE RATE AUTO STATUS LIGHT" does not illuminate.	a) T/M indicates that charge mode was not changed from "LO" to "AUTO."	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Six of eight PCG's are sufficient for mission success.	b) Remove affected PCG from the "Reg. Bus" until the battery reaches an acceptable state of charge.	b) None	b) IIIb	
		a) Pole B fails open in the reset position.	a) Loss of T/M readout of "Charge Rate Control" status.	a) None	a) T/M indicates that transfer from "LO" to "AUTO" was not accomplished.	a) N/A	---
		b) Contamination	b) None, due to T/M readout capability of amp-hour meter.	b) None	b) Monitor T/M indication of affected PCG's battery amp-hour meter for proper operation.	b) IIIb	
		a) Pole C fails open in the reset position.	a) Loss of visual indication of "Charge Rate" status.	a) When the "Charge Rate" switch is placed in the "AUTO" position the appropriate status light does not change from amber to green.	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by T/M.	b) Obtain ground indication of bypass status.	b) Provide requested information.	b) IIIb	
		a) Pole D fails open in the reset position.	a) Loss of capability to return battery charge rate to AUTO charge mode.	a) Associated amp-hour meter continues to indicate a "LO" charge rate.	a) T/M indicates that transfer from "LO" to "AUTO" was not accomplished.	a) N/A	---
		b) Contamination	b) None. Six of eight PCG's are sufficient for mission success.	b) Remove affected PCG from the "Reg. Bus" until the battery reaches an acceptable state of charge.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "Amp Hour Integrator". (K6-237,-238, -239, -240, -241, -242, -243, -244) 52-79703-45 (Any 1 of 8)	M S	a) Latch Coil fails open.	a) Associated Battery chargers amp hour meter cannot be transferred from primary to secondary.	a) 1. Green "Amp hour integrator PRI status light" does not extinguish. Amber "amp hour integrator SEC status light" does not illuminate. 2. Primary amp hour meter continues to indicate.	a) T/M indicates that transfer from "PRI" to "SEC" amp hour meter was not accomplished.	a) N/A	- - -
1.2.49 1.2.50 1.2.51 1.2.52 1.2.53 1.2.54 1.2.55 1.2.56		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None - Due to redundancy provided by T/M.	b) Position "Pwr Sys Cntl" switch to "CMD" and request ground to attempt transfer function via DCS.	b) Attempt function via DCS at crew request.	b) III b	
		a) Pole D fails open in the latch position.	a) Associated battery chargers amp. Hour meter cannot be transferred from primary to secondary.	a) Associated battery chargers amp hour meters both read zero.	a) None	a) N/A	- - -
		b) Contamination	b) 1. None - Due to redundancy provided by T/M 2. Battery is internally protected from overcharge.	b) Request ground indication of associated batterys state of charge.	b) Provide requested data.	b) III b	
		a) Pole C fails open in the latch position.	a) Loss of status light indication of associated PRI and SEC amp hour meter operation.	a) Associated green "Amp hour integrator PRI status light" extinguishes. Amber "AMP hour integrator SEC status light" does not illuminate.	a) None	a) N/A	- - -
		b) Contamination	b) None - Selected amp hour meter will provide indication of associated batterys state of charge.	b) None	b) None	b) III b	
		a) Pole B fails open in the latch position.	a) None - T/M Monitor, no effect in latch position.	a) None	a) None	a) N/A	- - -
		b) Contamination. Pole A used for GSE only. no effect.	b) None	b) None	b) None	b) III b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "Amp Hour Integrator". (K6-237, -238, -239, -240, -241, -242, -243, -244) 52-79703-45 (Any 1 of 8) (continued)		a) Reset coil fails open.	a) Associated Battery Charger amp - hour meter cannot be transferred from secondary to primary.	a) 1. Green "Amp hour integrator PRI status light" does not extinguish. Amber "Amp hour integrator sec. status light" does not illuminate. 2. Secondary amp hour meter continues to indicate.	a) T/M indicates that transfer from "SEC" to "PRI" AMP hour meter was not accomplished.	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None - Due to redundancy provided by T/M.	b) Position "Pwr Sys Cntl" switch to "CMD" and request ground to attempt transfer function via DCS.	b) Attempt function via DCS at crew request.	b) III b	
		a) Pole D fails open in the reset position.	a) Associated battery charger's amp - hour meter cannot be transferred from secondary to primary.	a) Associated battery chargers amp hour meters hath read zero.	a) None	a) N/A	- - -
		b) Contamination	b) None - Due to redundancy provided by T/M.	b) Request ground indication of associated batterys state of charge.	b) Provide requested data.	b) III b	
		a) Pole C fails open in the reset position.	a) Loss of status light indication of associated PRI and SEC amp hour meter operation.	a) Amber "Amp hour integrator sec status light" extinguishers. green "Amp hour integrator PRI status light" does not illuminate.	a) None	a) N/A	- - -
		b) Contamination	b) None - Selected amp hour meter will provide indication of associated batterys state of charge.	b) None	b) None	b) III b	
		a) Pole B fails open in the reset position.	a) Loss of T/M indication of associated battery chargers amp hour meter relay status.	a) None	a) T/M indicates that transfer from SEC to PRI amp hour meter was not accomplished.	a) N/A	- - -
		b) Contamination	b) None - Amp hour meter output will be available for T/M.	b) None	b) None	b) III b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch Momentary, "Amp Hour Integrator". (1 thru 8) 52-79705-109 (Any 1 of 8)	M	a) Contact Set 2,1 fails open in "SEC" position. (Pwr Sys Cntl in MANUAL)	a) Cannot manually transfer from "PRI" amp hour readout to "SEC" amp hour readout.	a) 1. Green "Amp hour integrator PRI status light" does not extinguish. Amber "Amp hour integrator sec status light" does not illuminate. 2. Primary amp hour meter continues to indicate.	a) T/M indicates that transfer from "PRI" to "SEC" amp hour meter was not accomplished.	a) N/A	- - -
Selects primary or secondary amp hour meter readout for Astronaut Display 1.2.594 thru 1.2.601		b) contamination	b) None - Due to redundancy provided by T/M.	b) Position "Pwr Sys Cntl" switch to "CMD" and request ground to perform transfer function via DCS.	b) Perform function via DCS at crew request.	b) III b	
		a) Contact Set 2,3 fails open in "PRI" position. (Pwr sys cntl in manual)	a) Cannot manually transfer from "Sec" amp hour readout to "PRI" amp hour readout.	a) 1. Amber "Amp hour Integetrator sec status light" does not extinguish. Green "Amp hour integrator PRI status light" does not illuminate. 2. Secondary amp hour meter continues to indicate.	a) T/M indicates that transfer from "Sec" amp hour meter to "PRI" amp hour meter was not accomplished.	a) N/A	- - -
		b) Contamination.	b) None - Due to redundancy provided by T/M	b) Position "PRR Sys Cntl" switch to "CMD" and request ground to perform transfer function via DCS.	b) Perform function via DCS at crew request.	b) III b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary, "Battery" (1 Thru 8) 52-79705-113 (Any 1 of 8)	M	a) Contact Set 5,6 fails open. (on position)	a) None, primary function is accomplished through redundant contact set 2,3 of the same switch. However, if the affected PCG charger has been bypassed it will continue to be bypassed.	a) If the affected PCG charger was bypassed the amber "Charger Bypass" Light will not extinguish.	a) T/M indicates that PCG charger does not change from "Bypass" to "Normal."	a) N/A	---
Connects Associated Battery and Voltage Sense Leads to the Associated Battery Charger.		b) Contamination	b) None - used only to repower EPS after complete shutdown due to system failure. In addition, DCS backs up switch function.	b) Position "Charger Switch" to "Normal."	b) None	b) IIIb	
1.2.57 1.2.58 1.2.602 1.2.603 1.2.604 1.2.605 1.2.606 1.2.607		a) Contact set 2,3 fails open. (on position)	a) None, function is accomplished through active redundant contact set 5,6 of the same switch. (Assuming associated battery contains enough power for relay transfer.)	a) None	a) None	a) N/A	---
		b) Contamination	b) None DCS backs up switch function.	b) None	b) None	b) IIIb	
		a) Contact set 5,4 fails open. (Off position)	a) None, due to active redundant contact set 2,1 of the same switch.	a) None	a) None	a) N/A	---
		b) Contamination	b) None, DCS backs up switch function.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary, "Battery" (1 Thru 8) 52-79705-113 (Any 1 of 8) (Continued)		a) Contact set 2,1 fails open. (Off position)	a) None, function is accomplished through active redundant contact set 5,4 of the same switch. (Assuming associated battery contains enough power for relay transfer.)	a) None	a) None	a) N/A	---
		b) Contamination	b) None DCS backs up switch function.	b) None	b) None	b) IIIb	
Relay, Latching, Battery Aux. (1 Thru 8) (K6-182,-183, -184,-185,-186, -187,-188,-189) 52-79703-53 (Any 1 of 8) 1.2.59 1.2.60 1.2.61 1.2.62 1.2.63 1.2.64 1.2.65 1.2.66	L M S	a) Latch coil fails open.	a) Affected battery voltage sensing leads cannot be connected to the associated battery charger.	a) When "Battery Switch" is positioned to the "ON" position, amber "Battery Off Status Light" extinguishes but green "Battery On Status light" does not illuminate.	a) T/M data indicates that Battery power will be off. However, "CHARGE RATE" function will indicate normal.	a) N/A	---
		b) Defective terminal subjected to mechanical or thermal stress. Pole A - used for GSE only - no effect.	b) None, affected battery charger will still function within acceptable limits.	b) Switch "Bus Power System" to "CMD" and request ground to attempt transfer via DCS.	b) Attempt function via DCS at crew request. Request crew to check "Battery Status" lights.	b) IIIb	
		a) Pole B fails open in latch position.	a) T/M indication of Battery Power relay will be "OFF."	a) None	a) T/M's indication of associated battery is "OFF." However, T/M's indication of associated battery charger's amp-hour meter indicates that current is being drawn from the battery.	a) N/A	---
		b) Contamination	b) None. T/M indication of associated Battery Charger amp-hour meter will indicate that current is being drawn from affected battery.	b) None	b) Request crew to check Battery Status Lights.	b) IIIb	
		a) Pole C fails open in the latch position.	a) None, used for Status Light indication in the reset position of the relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Battery Aux. (1 Thru 8) (K6-182,-183, -184,-185,-186, -187,-188,-189) 52-79703-53 (Any 1 of 8) (Continued)		a) Pole D fails open in the latch position.	a) Loss of visual indication of battery status.	a) When "Battery Switch" is positioned to the "ON" position, amber "Battery Off Status Light" extinguishes, but Green "Battery on Status Light" does not illuminate.	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by T/M.	b) Obtain ground indication of battery connection status.	b) Confirm battery connection status.	b) IIIb	
		a) Pole E fails open in the latch position.	a) None due to active redundant Pole F of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Pole F fails open in the latch position.	a) None due to active redundant Pole E of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Affected battery voltage sensing leads cannot be disconnected from the associated battery charger.	a) When "Battery Switch" is positioned to "OFF," associated status light does not change from green to amber. Both lights on during circuit test.	a) TM indicates that transfer was not accomplished.	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, sensing leads draw only a nominal amount of power from the battery.	b) Switch Bus Power System to "CMD" and request ground to attempt switching function via DCS.	b) Attempt function via DCS at crew request.	b) IIIb	
		a) Pole C fails open in the reset position.	a) Loss of visual indication of battery status.	a) When "Battery Switch" is positioned to "OFF" associated status light does not change from green to amber. Both lights on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of battery connection status.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Battery Aux. (1 Thru 8) (K6-182,-183, -184,-185,-186, -187,-188,-189) 52-79703-53 (Any 1 of 8) (Continued)		a) Pole D fails open in the reset position.	a) None, used for Status Light indication in the latch position of the relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Pole E or Pole F fail open in the reset position.	a) None, use for "Battery Voltage Sense" in latch position of relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
Relay, Latching, Battery Power (1 Thru 8) (K6-3,-17,-31, -45,-59,-87,-101, -73) 52-79713-13 (Any 1 of 8) (Connects Battery to Battery Charger)	L M S	a) Latch coil fails open.	a) Affected battery power line cannot be connected to associated battery charger.	a) When battery switch is placed in "On" position, there is no change of readout from the associated status lights. Both lights on during circuit test.	a) T/M indicates that the associated battery was not connected to the associated charger.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, six of eight PCG's are sufficient for mission success.	b) 1 Assuming the EPS has been shutdown reactivate the system via one of the other batteries on that bus. 2 Switch Bus Power System to "CMD" and request ground to attempt function via DCS.	b) Attempt function via DCS at crew request.	b) IIIb	
1.2.67 1.2.68 1.2.69 1.2.70 1.2.71 1.2.72 1.2.73 1.2.74		a) Pole E - used for GSE only - no effect.					
		a) Pole D fails open in the latch position.	a) T/M indication of Battery Power relay will be "Off."	a) None	a) T/M's indication of associated battery is "Off." However, T/M's indication of associated battery charger amp-hour meter indicates that current is being drawn from the battery.	a) N/A	---
		b) Contamination	b) None. T/M indication of associated battery charger amp-hour meter will indicate that current is being drawn from the affected battery.	b) None	b) Request crew to check Battery Status Lights.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Battery Power (1 Thru 8) (K6-3,-17,-31, -45,-59,-87,-101, -73) 52-79713-13 (Any 1 of 8) (Connects Battery Charger) (Continued)		a) Pole C fails open in the latch position.	a) Loss of associated green status light.	a) When relay is latched associated amber status light extinguishes but green status light does not illuminate. Both lights on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of battery connection status.	b) Confirm battery connection status.	b) IIIb	
		a) Pole A fails open in the latch position.	a) None, due to active redundant Pole B of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Pole B fails open in the latch position.	a) None, due to active redundant Pole A of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Affected battery power line cannot be disconnected from associated battery charger.	a) When Battery Swtich is positioned to "Off" associated status light does not change from green to amber. Both lights on during circuit test.	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Function is required only in the event of prior failure.	b) Switch Bus Power System to "CMD" and request ground to attempt functions via DCS.	b) Attempt function via DCS at crew request.	b) IIIb	
		a) Pole D fails open in latch position.	a) T/M indication of Battery Power (1 thru 8) will always be "Off."	a) None	a) T/M indicates that Battery Power will be "Off." However "Charge Rate" function will indicate normal.	a) N/A	---
		b) Contamination	b) None, other T/M data will indicate that battery is being charged.	b) None	b) Request crew to check Battery Status Lights.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Battery Power (1 Thru 8) (K6-3,-17,-31, -45,-59,-87,-101, -73) 52-79713-13 (Any 1 of 8) (Connects Battery to Battery Charger) (Continued)		a) Pole C fails open in reset position.	a) Loss of associated amber status light.	a) When relay is latched associated green status light extinguishes but amber status light does not illuminate. Both lights on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of battery connection status.	b) Confirm battery connection	b) IIIb	
Switch, Momentary, Discharge Limit (1 Thru 8) 52-79705-109 (Any 1 of 8) (Limits Battery's Discharge Level) 1.2.75 1.2.76 1.2.77 1.2.78 1.2.79 1.2.80 1.2.81 1.2.82	M	a) Contact set 2,1 fails open in "inhibit" position.	a) Battery discharge limit function cannot be manually dsiabled.	a) When switch is placed in "Inhibit" position, associated status light does not change from green to amber. Both lights on during circuit test.	a) T/M data indicates that associated battery discharge limit function was not disabled.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power System to "CMD" ard request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
		a) Contact set 2,3 fail open in "Auto" position.	a) Battery discharge limit function cannot be manually enabled.	a) When switch is placed in "Auto" position, associated green status light does not illuminate. Both lights on during circuit test.	a) T/M indicates that associated battery discharge limit function was not enabled.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power System to "CMD" ard request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
Relay, Latching, Discharge Limit Control (1 Thru 8) (K6-216,-217, -218,-219,-220, -221,-222,-223) 52-79705-45 (Any 1 of 8) 1.2.83, 1.2.84 1.2.85, 1.2.86 1.2.87, 1.2.88 1.2.89, 1.2.90	L M S	a) Latch coil fails open.	a) Battery discharge limit function cannot be disabled.	a) When Discharge Limit Swtich is placed in Inhibit position associated status light does not charge from green to amber. Both lights on during circuit test.	a) T/M indicates that associated battery function was not disabled.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock. Pole A. Used for GSE only - No effect.	b) None, function is required only in the event of prior failure.	b) Switch Bus Power System to "CMD" ard request ground to attempt disable function via DCS.	b) Attempt function via DCS at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Discharge Limit Control (1 Thru 8) (K6-216,-217, -218,-219,-220, -221,-222,-223) 52-79705-45 (Any 1 of 8) (Continued)		a) Pole B fails open in latch position.	a) None. T/M monitor, no effect in latch position.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Pole C fails open in the latch position.	a) Loss of visual indication of "Discharge Limit" function.	a) When "Discharge Limit Switch" is positioned to "Inhibit," the Green "Discharge Limit Auto Status Light" extinguishes but the Amber "Discharge Limit Inhibit Status Light" does not illuminate.	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by T/M.	b) Obtain ground indication of discharge limit function.	b) Provide crew requested data.	b) IIIb	
		a) Pole D - no effect in latch position.					
		a) Reset coil fails open.	a) Battery discharge limit function cannot be enabled (AUTO).	a) When Discharge Limit Switch is placed in "Auto" position associated status light does not change from amber to green. Both lights on during circuit test.	a) T/M indicates that associated battery discharge limit function was not enabled.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) Associated PCG continues to operate in the "Discharge Limit Inhibit" mode.	b) Maintain system surveillance to prevent affected battery from reaching an excessive discharge level.	b) Maintain system surveillance and supply data at crew request.	b) IIIb	
		a) Pole B fails open in the reset position.	a) T/M indication of associated PCG's "Discharge Limit" function is "Inhibit."	a) None	a) Battery Discharge Limit T/M data will indicate inhibit mode.	a) N/A	---
		b) Contamination	b) None	b) None	b) Request crew to check the status of the Discharge Limit Control Relay. Monitor battery to maintain minimum charge level during storage.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Discharge Limit Control (1 Thru 8) (K6-216,-217, -218,-219,-220, -221,-222,-223) 52-79705-45 (Any 1 of 8) (Continued)		a) Pole C fails open in the reset position.	a) Loss of visual indication of "Discharge Limit function."	a) When "Discharge Limit Switch" is positioned to "Auto" the amber "Discharge Limit Inhibit Status Light" extinguishes but the green "Discharge Limit Auto Status Light" does not illumirate.	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by T/M.	b) Obtain ground indication of discharge limit status.	b) Provide crew requested data.	b) IIIb	
		a) Pole D fails open in the reset position.	a) Voltage regulator discharge limit function cannot be enabled in affected PCG.	a) Voltage readout for affected battery indicates abnormally long time required to recharge battery.	a) T/M indicates abnormal time required to recharge battery.	a) N/A	---
		b) Contamination	b) None, due to redundant Power Conditioning Groups.	b) Maintain system surveillance during manned phase.	b) Support crew surveillance with T/M data. Maintain complete surveillance during orbital storage.	b) IIIb	
Switch, Momentary, Power Conditioning Group Output (1 Thru 8) 52-79705-109 (Any 1 of 8) (Applies PCG Output to Reg. Bus)	M	a) Contact set 2,3 fails open in "On" position.	a) Cannot manually connect the associated PCG output to associated Reg. Bus.	a) Appropriate status light does not change from amber to green. Both lights are on during circuit test.	a) T/M indicates that associated PCG output was not connected to the selected Reg. Bus.	a) N/A	---
		b) Contamination	b) None, DCS backs up switch function.	b) Switch Bus Power System to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
1.2.91, 1.2.92 1.2.93, 1.2.94 1.2.95, 1.2.96 1.2.97, 1.2.98		a) Contact set 2,1 fails open in "Off" position.	a) Output of associated PCG cannot be manually removed from the associated Reg. Bus.	a) Appropriate status light does not change from green to amber. Both lights are on during circuit test.	a) T/M indicates that associated PCG output was not removed from associated Reg. Bus.	a) N/A	---
		b) Contamination	b) None, DCS backs up switch function.	b) Switch Bus Power System to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Power Conditioning Group Output Aux. (1 Thru 8) 52-79703-53 (K6-151,-153, -155,-157,-159, -161,-163,-165) (Any 1 of 8) 1.2.99, 1.2.100, 1.2.101, 1.2.102 1.2.103, 1.2.104 1.2.105, 1.2.106	L M S	a) Latch coil fails open.	a) Voltage sensing leads on affected voltage regulator are not connected when PCG output is applied to Reg. Bus.	a) When "PCG Output" switch is positioned to "ON" the Amber "Power Conditioning Group Output Off Status Light" extinguishes, but the green "Power Conditioning Group Output on Status Light" does not illuminate.	a) T/M indicates that the transfer was not accomplished.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None, Reg. Bus voltage can be adjusted with remaining three (3) Regulator output adjust potentiometers.	b) Switch Bus Power System to "CMD" and request ground to attempt function via DCS.	b) 1 Attempt function via DCS at crew request. 2 Monitor associated Reg. Bus voltage.	b) IIIb	
		a) Pole A - used for GSE only - no effect.					
		a) Pole B fails open in the latch position.	a) Regulator power T/M data indicates "Off."	a) None	a) T/M regulator power data indicates "Off."	a) N/A	---
		b) Contamination	b) None, due to T/M system checkout capability.	b) None	b) Perform checkout of power system via T/M.	b) IIIb	
		a) Pole C fails open in latch position.	a) None, no effect in latch position.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) N/A	
		a) Pole D fails open in latch position.	a) Loss of associated green status light.	a) When "Power Conditioning Group Output Switch" is placed "On," amber "Power Conditioning Group Output Off Status Light" extinguishes but green "Power Conditioning Group Output on Status Light" does not illuminate. Both lights on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None due to the redundancy provided by T/M.	b) Obtain ground indication of regulator output connection status.	b) Confirm regulator output connection to bus.	b) IIIb	

* COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Power Conditioning Group Output Aux. (1 Thru 8) 52-79703-53 (K6-151,-153, -155,-157,-159, -161,-163,-165) (Any 1 of 8) (Continued)		a) Pole E fails open in latch position.	a) Loss of Associated Regulator Fine Adjustment Potentiometer.	a) Change of voltmeter indication on "Cluster Volts Reg. Bus Voltmeter."	a) T/M indication of associated Reg. Bus voltage will be other than nominal.	a) N/A	---
		b) Contamination	b) None, equipment is designed to operate over a voltage range of 25 to 30 volts.	b) Attempt voltage readjust to desired bus level by adjusting remaining Regulator Adjustment Potentiometers.	b) None	b) IIIb	
		a) Pole F fails open in latch position.	a) Loss of associated Regulator Fine Adjustment Potentiometer.	a) Slight change voltage indication of "Cluster Volts Reg. Bus Voltmeter."	a) T/M indication of associated Reg. Bus Voltage will be other than nominal.	a) N/A	---
		b) Contamination	b) None, equipment is designed to operate over a voltage range of 25 to 30 volts.	b) Attempt voltage readjust to desired bus level by adjusting remaining Regulator Adjustment Potentiometers.	b) None	b) IIIb	
		a) Reset coil fails open.	a) Voltage sensing leads on affected voltage regulator are not disconnected when power output is disconnected.	a) When PCG Output Switch is placed in "Off" position green status light extinguishes, but amber status light does not illuminate. Both lights are on during circuit test.	a) T/M indicates that the transfer was not accomplished.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None. Function required only in the event of prior failure.	b) Switch Bus Power System to "CMD" and request ground to attempt function via DCS.	b) Attempt function via DCS at crew request.	b) IIIb	
		a) Pole C fails open in reset position.	a) Loss of associated amber status light.	a) When relay is reset, green status light extinguishes, but amber status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	---
		b) Contamination Pole B, D, E, or F - no effect in reset position.	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of regulator output connection status.	b) Confirm regulator output removal from bus.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Power Conditioning Group Output Power (K6-150,-152, -154,-156,-158, -160,-162,-164) 52-79713-13 (Any 1 of 8)	L M S	a) Latch coil fails open.	a) PCG output cannot be connected to the associated bus.	a) When "PCG Output" switch is positioned to "On," the amber "Power Conditioning Group Output Off Status Light" extinguishes, but the green "Power Conditioning Group Output On Status Light" does not illuminate.	a) T/M indicates that the associated PCG output was not connected to the associated bus.	a) N/A	---
		b) Contamination	b) None, six of eight PCG's are sufficient for mission success.	b) Switch Bus Power System to "CMD" and request ground to attempt function via DCS.	b) Attempt function via DCS at crew [illegible].	b) [illegible]	
1.2.107, 1.2.108, 1.2.109, 1.2.110, 1.2.111, 1.2.112, 1.2.113, 1.2.114		a) Pole A or Pole B fails open in the latch position.	a) No effect - due to active redundancy.	a) None	a) None	a) [illegible]	- - - - - - - - - -
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Pole C fails open in the latch position.	a) Loss of associated green status light.	a) When "PCG Output" switch is positioned to "On" the amber "Power Conditioning Group Output Off Status Light" extinguishes, but green "Power Conditioning Group Output On Status Light" does not illuminate.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of PCG output connection status.	b) Confirm regulator output connection to bus.	b) IIIb	/
		a) Pole D fails open in latch position.	a) T/M Regulator Power data indicates "Off."	a) None	a) T/M regulator power data indicates off.	a) N/A	---
		b) Contamination Pole E fails open, used for GSE only - no effect.	b) None, due to T/M "Power System checkout capability.	b) None	b) Perform power system checkout via T/M.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Power Conditioning Group Output Power (K6-150,-152, -154,-156,-158, -160,-162,-164) 52-79713-13 (Any 1 of 8) (Continued)		a) Reset coil fails open.	a) Output of associated PCG cannot be removed from Reg. Bus.	a) Appropriate green "Power Conditioning Group Output On Status Light" does not extinguish. Amber "Power Conditioning Group Output Off Status Light" does not illuminate.	a) T/M indicates that the associated PCG output was not removed from the associated bus.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by "Battery Power Relay and Switch," and "Array Group Relay and Switch."	b) 1 Switch Bus Power System to "CMD" and request ground to attempt function via DCS. 2 Position associated "Battery Switch" to "Off."	b) Attempt function via DCS at crew request.	b) IIIb	
		a) Pole A or Pole B fails open in the reset position. (Used in latch position only) - no effect					
		a) Pole C fails open in reset position.	a) Loss of associated amber status light.	a) When associated "Power Conditioning Group Output Switch" is positioned "Off" the associated "Power Conditioning Group" status light does not change from green to amber.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Obtain ground indication of regulator output connection status.	b) Confirm regulator output removal from bus.	b) IIIb	
		a) Pole D fails open - no effect in reset position.					
Switch, Momentary, PCG Bus Select (1 Thru 4) 52-79705-109 (Any 1 of 4) (Transfers PCG Output to Selected Bus) 1.2.115, 1.2.116, 1.2.117, 1.2.118	M	a) Contact set 2,1 fails open in Reg. 2 position.	a) Affected voltage regulator cannot be manually transferred to Reg. Bus #2.	a) When switch is placed in Reg. 2 position, appropriate status light does not change from green to amber. Both lights are on during circuit test.	a) T/M indicates that appropriate regulator output did not transfer.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Transfer an alternate voltage regulator to Bus #2, or switch Bus Power System to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary, PCG Bus Select (1 Thru 4) 52-79705-109 (Any 1 of 4) (Transfers PCG Output to Selected Bus) (Continued)		a) Contact set 2,3 fails open in Reg. 1 position.	a) Affected voltage regulator cannot be manually transferred to Reg. Bus #1.	a) When switch is placed in Reg. 1 position, appropriate status light does not change from amber to green. Both lights are on during circuit test.	a) T/M data indicates that appropriate regulator output did not transfer.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Transfer an alternate voltage regulator Bus #1 or Switch Bus Power System to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
Switch, Momentary, PCG Bus Select (5 Thru 8) 52-79705-109 (Any 1 of 4) 1.2.119, 1.2.120, 1.2.121, 1.2.122	M	a) Contact set 2,1 fails open in Reg. 1 position.	a) Affected voltage regulator cannot be manually transferred to Reg. Bus #1.	a) When switch is placed in Reg. 1 position, appropriate status light does not change from green to amber. Both lights are on during circuit test.	a) T/M data indicates that appropriate regulator output did not transfer.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Transfer an alternate voltage regulator to Reg. Bus #1 or request DCS actuation.	b) Perform function via DCS at crew request.	b) IIIb	
		a) Contact set 2,3 fails open in Reg. 2 position.	a) Affected voltage regulator cannot be manually transferred back to Reg. Bus #2.	a) When switch is placed in Reg. 2 position, appropriate status light does not change from amber to green. Both lights are on during circuit test.	a) T/M data indicates that appropriate regulator output did not transfer.	a) N/A	---
		b) Contamination	b) None. DCS backs up switch function.	b) Transfer an alternate voltage regulator to Reg. Bus #2, or switch Bus Power System to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
Relay, Latching, PCG Bus Select Power (1 Thru 4) (K6-13,-27,-41, -55) 52-79713-13 (Any 1 of 4) 1.2.123, 1.2.124, 1.2.125, 1.2.126	L M S	a) Latch coil fails open.	a) Output from affected voltage regulator cannot be transferred from Reg. Bus #1 to Reg. Bus #2.	a) When appropriate bus select switch is placed in Bus #2 position, green status light extinguishes, but amber status light does not illuminate. Both lights are on during circuit test.	a) T/M data indicates that regulator output did not transfer.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg. Bus #2 if required.	b) Transfer an alternate Reg. voltage regulator to Bus #2 via DCS if required.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, PCG Bus Select Power (1 Thru 4) (K5-13,-27,-41, -55) 52-79713-13 (Any 1 of 4) (Continued)		a) Pole A or Pole B fails open in latch position.	a) Associated voltage regulator output cannot be transferred from Reg. Bus #1 to Reg. Bus #2.	a) Associated battery's ammeter indicates that affected regulator draws only "No-load" current.	a) T/M data indicates that affected regulator draws only "No-load" current from associated battery.	a) N/A	---
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Reset affected relay. Transfer an alternate regulator to Reg. Bus #2.	b) Reset affected relay. Transfer an alternate regulator to Reg. Bus #2 via DCS if required.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of associated amber status light.	a) When affected relay is latched, green status light extinguishes, but amber status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that regulator output did transfer.	b) Provide confirmation that regulator output did transfer.	b) III	
		Pole D fails open - no effect in latch position.					
		Pole E fails open, used for GSE only - no effect.					
		a) Reset coil fails open.	a) Associated voltage regulator output cannot be transferred from Reg. Bus #2 to Reg. Bus #1.	a) When appropriate Bus Select Switch is placed in Bus #1 position, amber status light extinguishes, but green status light does not illuminate. Both lights are on during circuit test.	a) T/M indicates that regulator output did not transfer.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg. Bus #1 if required.	b) Transfer an alternate voltage regulator to Reg. Bus #1 via DCS if required.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, PCG Bus Select Power (1 Thru 4) (K6-13,-27,-41, -55) 52-79713-13 (Any 1 of 4) (Continued)		a) Pole A or Pole B fails open in the reset position.	a) Associated voltage regulator output cannot be transferred from Reg. Bus #2 to Reg. Bus #1.	a) Associated battery's ammeter indicates that affected regulator draws only "No-load" current.	a) T/M indicates that associated regulator output did not transfer.	a) N/A	---
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg. Bus #1 if required.	b) Coordinate with crew for transfer of an alternate voltage regulator to Reg. Bus #1 if required.	b) IIIb	
		a) Pole C fails open in reset position.	a) Loss of associated green status light.	a) When affected relay is reset, amber status light extinguishes, but green status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that regulator output did transfer.	b) Provide confirmation that regulator output did transfer.	b) IIIb	
		a) Pole D fails open in the reset position.	a) T/M indicates that associated PCG output is still connected to Reg. Bus 2.	a) None	a) T/M indicates that regulator		
		b) Contamination	b) None	b) None	b) Coordinate with crew for transfer of an alternate voltage regulator output to Reg. Bus #1 if required.	b) IIIb	
Relay, Latching, PCG Bus Select Power Relay (5 Thru 8) (K6-69,-83,-97, -111) 52-79713-13 (Any 1 of 4) 1.2.127, 1.2.128, 1.2.129, 1.2.130	L M S	a) Latch coil fails open.	a) Output from affected voltage regulator cannot be transferred from Reg. Bus #2 to Reg. Bus #1.	a) When appropriate Bus Select Switch is placed in Bus #1 position, green status light extinguishes, but amber status light does not illuminate. Both lights are on during circuit test.	a) T/M data indicates that regulator output did not transfer.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg. Bus #1 if required.	b) Transfer an alternate voltage regulator to Reg. Bus #1 if required.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, PCG Bus Select Power Relay (5 Thru 8) (K6-69,-83,-97, -111) 52-79713-13 (Any 1 of 4) (Continued)		a) Pole A or Pole B fails open in latch position.	a) Associated voltage regulator output cannot be transferred from Reg. Bus #2 to Reg. Bus #1.	a) Associated battery's ammeter indicates that affected regulator draws only "No-load" current.	a) T/M data indicates that affected regulator draws only "No-load" current from associated battery.	a) N/A	----
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Reset affected relay. Transfer an alternate regulator to Reg. Bus #1.	b) Reset affected relay. Transfer an alternate regulator to Reg. Bus #1 via DCS it required.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of associated amber status light.	a) When affected relay is latched green status light extinguishes, but amber status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	----
		b) Contamination Pole D fails open - no effect in latch position. Pole E fails open, used for GSE only - no effect.	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that regulator output did transfer.	b) Provide confirmation that regulator output did transfer.	b) IIIb	
		a) Reset coil fails open.	a) Associated voltage regulator output cannot be transferred from Reg. Bus #1 to Reg. Bus #2.	a) When appropriate Bus Select Switch is placed in Bus #2 position, amber status light extinguishes, but green status light does not illuminate. Both lights are on during tests.	a) T/M data indicates that regulator output did not transfer.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg. Bus #2, if required.	b) Transfer an alternate voltage regulator to Reg. Bus #2 via DCS if required.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, PCG Bus Select Power (5 thru 8)		a) Pole A or Pole B fails open in the reset position.	a) Associated voltage regulator output cannot be transferred from Reg Bus #1 to Reg Bus #2.	a) Associated batteries ammeter indicates that affected regulator draws only "no-load" current.	a) T/M indicates that associated regulator output did not transfer.	a) N/A	----
(Continued)		b) Contamination	b) None due to alternate PCG switching capability.	b) Transfer an alternate regulator output to Reg Bus #2 if required.	b) Coordinate with crew for transfer of an alternate voltage regulator to Reg Bus #2 if required.	b) IIIB	
		a) Pole C fails open in reset position.	a) Loss of associated green status light.	a) When affected relay is reset amber status light extinguishes, but green status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that regulator output did transfer.	b) Provide confirmation that regulator output did transfer.	b) IIIB	
		a) Pole D fails open in reset position.	a) Regulator Bus Select T/M data indicates associated regulator is connected to Reg Bus #1.	a) None.	a) Regulator Bus Select T/M data indicates associated regulator is connected to Reg Bus #1.		
		b) Contamination	b) None	b) None	b) Coordinate with crew for transfer of an alternate voltage regulator output to Reg Bus #2 if required.		
Relay, Latching, PCG Bus Select Aux. Relay (1 thru 4) (K5-190, -191, -192, -193) 52-79703-53 (Any 1 of 4) 1.2.131,1.2.132, 1.2.133,1.2.134	L M S	a) Latch coil fails open.	a) Voltage sensing leads on affected voltage regulator cannot be transferred from Reg Bus #1 to Reg Bus #2.	a) When appropriate PCG Bus Select Switch is placed in Bus #2 position green status light extinguishes but amber status light does not illuminate. Both lights are on during circuit test.	a) T/M data indicates that appropriate regulator output did not transfer.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal shock. Pole A, used for GSE only- No effect. Pole B, T/M monitor No effect in latch position.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg Bus #2 if required.	b) Transfer an alternate voltage regulator to Reg Bus #2 if required.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching PCG Bus Select Aux. Relay (1 thru 4) (K5-190, -191, -192, -193) 52-79703-53 (Any 1 of 4) (Continued)		Pole C, visual monitor - No effect in latch position.					
		a) Pole D fails open in latch position.	a) Loss of associated amber status light.	a) When appropriate PCG Bus Select Switch is placed in Bus #2 position green status light extinguishes but amber status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that transfer was accomplished.	b) Provide confirmation that regular output did transfer.	b) IIIB	
		a) Pole E or F fails open in latch position.	a) Loss of voltage sensing leads of effect voltage regulator to Reg Bus #2.	a) Change of Voltage Indication on cluster volts Bus #2 Voltmeter.	a) T/M data indication of Reg. Bus #2 voltage will be other than normal.	a) N/A	----
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Return relay to reset position and select an alternate PCG.	b) Return relay to reset position and select an alternate PCG via DCS.	b) IIIB	
		a) Reset coil fails open.	a) Voltage sensing leads of affected voltage regulator cannot be transferred from Reg Bus #2 to Reg Bus #1.	a) When appropriate PCG Bus Select Switch is placed in Bus #2 position, amber status light extinguishes but green status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that transfer was accomplished.	b) Provide confirmation that regulator output did transfer.	b) IIIB	
		Pole D, visual monitor - No effect in reset position.					
		a) Pole E or F open in reset position.	a) Loss of voltage sensing leads of affected voltage regulator to Reg Bus #1.	a) Change of voltage indication on cluster volts Reg Bus #1 voltmeter.	a) T/M indication of Reg Bus #2 will be other than nominal.	a) N/A	----
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Return relay to latch position and select an alternate PCG.	b) Return relay to latch position and select an alternate PCG via DCS.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, PCG Bus Select Aux. (5 thru 8) K6-194, -195, -196, -197) 52-79703-53 (Key 1 of 4) 1.2.135, 1.2.136, 1.2.137, 1.2.138	L M S	a) Latch coil fails open.	a) Voltage sensing loads on affected voltage regulator cannot be transferred from Reg Bus #2 to Reg Bus #1.	a) When appropriate PCG Bus Select Switch is placed in Bus #1 position, green status light extinguishes but amber status light does not illuminate. Both lights are on during circuit test.	a) T/M indicates that appropriate relay did change state.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal shock. Pole A, used for GSE only - No effect Pole B, T/M monitor No effect in latch position. Pole C, visual monitor - No effect in latch position.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator output to Reg Bus #1 if required.	b) Transfer an alternate voltage regulator to Reg Bus #1 via DCS at crew request.	b) IIIB	
		a) Pole D fails open in latch position.	a) Loss of associated amber status light. b) Volt-	a) When appropriate PCG Bus Select Switch is placed in Bus #1 position, green status light extinguishes but amber status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that transfer was accomplished.	b) Provide confirmation that regulator output did transfer.	b) IIIB	
		a) Pole E or F fails open in latch position.	a) Loss of voltage sensing leads of affected voltage regulator to Reg Bus #2.	a) Change of voltage indication on cluster volts Bus #1 Voltmeter.	a) T/M indication of Reg Bus #1 voltage will be other than normal.	a) N/A	
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Return relay to reset position and select an alternate PCG.	b) Return relay to reset position and select an alternate PCG via DCS.	b) IIIB	

*COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, PCG Bus Select Aux. (5 thru 8) (Continued)		a) Reset coil fails open.	a) Voltage sensing leads of affected voltage regulator cannot be transferred from Reg Bus #1 to Reg Bus #2.	a) When appropriate PCG Bus Select Switch is placed in Bus #2 position, amber status light extinguished but green status light does not illuminate. Both lights are on during circuit test.	a) T/M data indicates that appropriate regulator output did not transfer.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None, due to alternate PCG switching capability.	b) Transfer an alternate voltage regulator to Reg Bus #2, if required.	b) Transfer an alternate voltage regulator to Reg Bus #2 via DCA, if required.	b) IIIB	
		a) Pole B fails open in reset position.	a) "Regulator Bus Select" T/M data indicates that associated PCG output did not transfer to Bus #2.	a) None	a) T/M data indicates that associated PCG output did not transfer to Bus #2.		
		b) Contamination.	b) None, due to T/M readout of associated parameters.	b) None	b) Monitor associated T/M parameters to determine status.	b) IIIB	
		a) Pole C fails open in reset position.	a) Loss of associated green status light.	a) When appropriate PCG Bus Select Switch is placed in Bus #2 position, amber status light extinguishes but green status light does not illuminate. Both lights are on during circuit test.	a) None	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground confirmation that transfer was accomplished.	b) Provide confirmation that regulator output did transfer.	b) IIIB	
		Pole D, visual monitor - No effect in reset position.					
		a) Pole E or F fails open in reset positinn.	a) Loss of voltage sensing leads of affected voltage regulator to affected Reg.	a) Change of voltage indication on cluster volts Reg Bus #2 voltmeter.	a) T/M data indication of Reg Bus #1 voltage will be other than normal.	a) N/A	----
		b) Contamination	b) None, due to alternate PCG switching capability.	b) Return relay to latch position and select an alternate PCG.	b) Return relay to latch position and select an alternate PCG via DCS.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, Reset Coil of Charger By Pass Power Relay 52-79728-1 (Any 1 of 8) 1.2.179, 1.2.180, 1.2.181, 1.2.182, 1.2.183, 1.2.184, 1.2.185, 1.2.186	L M S	a) Short	a) When the Charger By Pass Power Relay is reset the associated battery is connected to the associated charger.	a) When the associated Charger By Pass Power Relay is reset the associated Battery Power Relay and Battery Aux. Relay are latched?	a) T/M data indicates that when the associated Charger By Pass Power Relay is reset the associated Battery Power Relay and Battery Aux. Relay are latched.	a) N/A	----
		b) Contamination	b) None. Function is required only in event of prior failure.	b) Reset the Battery Power Relay and the Battery Aux. Relay if necessary.	b) Reset the Battery Power Relay and the Battery Aux. Relay via the DCS if required.	b) IIIB	
	M	a) Opens	a) The Charger By Pass Power Relay cannot be reset by the associated Battery Switch.	a) When the Battery Switch is placed in the "On" position the associated Charger By Pass Relay is not reset.	a) None	a) N/A	----
		b) Defective bond subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the associated Charger Switch.	b) Reset the Charger By Pass Power Relay with the associated Charger Switch.	b) None.	b) IIIB	
Diode, Status Lights Blocking, 52-79728-1 (Any 1 of 166) 1.2.187 thru 1.2.210	M	a) Short	a) Loss of current isolation between the status lights.	a) In the event of a shorted diode, and the "Bus Power System Light Switch" is positioned to "Status" all of the associated status lights of the group will illuminate.	a) None.	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground indication of affected relay status.	b) Provide requested data.	b) IIIB	
		a) Open	a) Associated status light does not light during circuit test.	a) Associated status light does not light during circuit test.	a) None	a) N/A	----
		b) Defective wire subjected to mechanical or thermal stress.	b) None, associated status light illuminates when the appropriate relay is switched.	b) None	b) None	b) IIIB	
Elec. Power System Status Lights 61C769007-1, -3 (Any 1 of 166) 1.2.211 thru 1.2.340	M	a) Open filament,	a) Reduced on board system visual monitoring capability.	a) Light does not illuminate when status switch is placed in test position.	a) None	a) N/A	----
		b) Mechanical or thermal stress.	b) None. T/M is backup for EPS status.	b) (1) Monitor associated instrumentation for proper system operation. (2) Replace bulbs.	b) Support crew evaluation of system with T/M data.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Array Ammeter (1 & 2, 3 & 4, 5 &6, 7 & 8) 1.2.139 thru 1.2.146 61B8810002-1	M	a) Erroneous reading.	a) Degraded capability to immediately assess associated solar array performance.	a) Unable to obtain correct current reading from the affected meter.	a) None	a) N/A	----
		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIB	
Battery Ammeter (1 & 2, 3 & 4, 5 & 6, 7 & 8) 61B810002-7 (Any 1 of 4) 1.2.147 thru 1.2.150	M	a) Erroneous reading.	a) Degraded capability to immediately assess the associated battery's charging and discharging conditions.	a) Unable to obtain correct current reading from the affected meter.	a) None	a) N/A	----
		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIB	
Battery Voltmeter (1 & 2, 3 & 4, 5 & 6, 7 & 8) 61B810002-3 (Any 1 of 4) 1.2.151 thru 1.2.154	M	a) Erroneous reading.	a) Degraded capability to immediately assess the associated battery voltage.	a) Unable to obtain correct voltage reading from the affected meter.	a) None	a) N/A	----
		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIB	
Fuse - Resistor (3-23, -24, -25, -26, -27, -28, -29, -30) 52-79720-31 (Any 1 of 8) 1.2.155 thru 1.2.162	L M S	a) Opens prematurely.	a) Loss of associated solar array voltage T/M data.	a) None	a) Loss of associated solar array group voltage T/M data.	a) N/A	----
		b) Vibration induced defect.	b) None, due to overall T/M system capabilities.	b) None	b) Use supplementary T/M data from associated PCG to indicate level of solar array voltage.	b) IIIB	
Fuse-Resistor (3-31, -32, -33, -34, -35, -36, -37, -38) 52-79720-31 (Any 1 of 8) 1.2.163 thru 1.2.170	L	a) Opens prematurely	a) Loss of associated battery voltage T/M data.	a) None	a) Loss of associated battery voltage T/M data.	a) N/A	----
		b) Vibration induced defect.	b) None, due to overall T/M system capabilities.	b) None	b) Use supplementary T/M data from associated PCG.	b) IIIB	
Fuse-Voltmeter Protection. (6-31, -32, -33, -34, -35, -36, -37, -38) 52-79720-323 (Any 1 of 8) 1.2.171 thru 1.2.178	M	a) Opens prematurely.	a) Degraded capability to immediately assess the associated battery voltage	a) Unable to obtain voltage reading from the affected voltmeter.	a) None	a) N/A	---
		b) Vibration induced defect.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, "AMP Hour Integrator (1 thru 8) (6-197, 6-198, 6-199, 6-200, 6-201, 6-202, 6-203, 6-204) 52-79721-322 Any 1 of 8	M	a) Opens before break current is exceeded.	a) None	a) Circuit breaker "Bat Handle" is in the "Open position".	a) None	a) N/A	----
		b) Internal defect causes coil to short to ground.	b) None due to redundancy provided by associated battery.	b) Position the affected circuit breakers handle to the "closed" position if required.	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, "Power Conditioning Group Control" (1 thru 8) (6-12, -13, -14, -15, -16, -17, -18, -19) 52-79721-322 (Any 1 of 8) 1.2.341 thru 1.2.348	M	a) Opens before break current is exceeded.	a) Loss of control of associated PCG.	a) Control elements in associated PCG do not function. Circuit breaker trips and will not remain reset under normal load.	a) None	a) N/A	----
		b) Internal defect causes coil to short to ground.	b) None. Control function required only in the event of malfunction in associated PCG.	b) Request ground to perform required function.	b) Use DCS command for required individual PCG switching, at crew request.	b) IIIB	
Switch "Bus 1 Pwr. Sys. Light" 52-79705-139 1.2.349	M	a) Contact set 2,1 fail open in "TEST" position.	a) None, due to active redundant contact set 5,4.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 5,4 fail open in "TEST" position.	a) None, due to active redundant contact set 2.1.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 11, 10 fail open in "TEST" position.	a) (1) Loss of status light check capability of "Bus 1 EPS SHUNT REGULATOR" status. (2) Loss of status light check capability of "AM Bus 1 Pwr. Reg. Bus 2" function in test position.	a) (1) AM Bus 1 Pwr Reg Bus 2 status light does not illuminate amber when the Bus 1 Pwr Sys lights switch is held in the "TEST" position. (2) Green "BUS 1 EPS SHUNT REGULATOR CONNECT" status light does not illuminate.	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	
		a) Contact set 2,3 fail open in "STATUS" position.	a) None, due to active redundant contact set 5,6.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch "Bus 1 Pwr. Sys. Light" 52-79705-139 1.2.3.49		a) Contact set 5,6 fail open in "STATUS" position.	a) None, due to active redundant contact set 2,3.	a) None.	a) None.	a) N/A	----
(Continued)		b) Contamination	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch "Bus 1 Pwr. Sys. Light" 52-79705-69 (Continued)		a) Contact set 11, 12 fail open in "STATUS" position.	a) (1) Loss of status light check of "AM BUS 1 PWR REG BUS 2" function in "STATUS" position. (2) Loss of status light check of "SHUNT REGULATOR", "CONNECT", or "DISCONNECT".	a) (1) If AM Bus 1 Power Switch has actuated to the "Reg Bus 2" position and the Bus 1 Pwr Sys lights switch is positioned to "STATUS", the AM Bus 1 Pwr Bus 2 status light does not illuminate amber. (2) If the "Shunt Regulator Switch" has been positioned to "Connect" and the "Bus Power System Lights" switch is positioned to "STATUS" the green "Bus 1 EPS Shunt Regulator connect status light" does not illuminate.	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	
		a) Contact set 8,7 fail open in "TEST" position.	a) Loss of status light check of "Reg Bus 1" to "OWS Power Bus 1" tie.	a) "OWS Power Bus 1 status" lights does not illuminate when "Bus 1 Power System lights switch" is placed in "TEST".	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	
		a) Contact set 8,9 fail open in "STATUS" position.	a) Loss of status light check of "Reg Bus 1" to "OWS Power Bus 1" tie.	a) If "OWS Bus 1 switch" has been positioned "on", and the Bus 1 Pwr Sys lights switch is positioned to "STATUS" the "OWS Power Bus 1 status light does not illuminate green".	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	
Switch, "Bus 2 PWR SYS Lights" 52-79705-69 1.2.350	M	a) Contact set 2,1 fail open in "TEST" position.	a) None, due to active redundant contact set 5.4.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 5,4 fail open in "TEST" position.	a) None, due to active redundant contact set 2,1.	a) None	a) None	a) N/A	----

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, "Bus 2 PWR SYS Lights" 52-79705-69 1.2.350 (Continued)		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 11, 10 fail open in "TEST" position.	a) (1) Loss of status light check capability of "Bus 2 EPS SHUNT REGULATOR" status. (2) Loss of status light check capability of "AM Bus 2 PWR Reg Bus 1" function in test position.	a) (1) AM Bus 2 Pwr Reg Bus 1 status light does not illuminate amber when Bus 2 Pwr SYS light switch is held in "TEST" position. (2) Green "Bus 1 EPS SHUNT REGULATOR CONNECT" status light does not illuminate.	a) None.	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when requested.	b) Provide status check at crew request.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, "Bus 2 PWR SYS Lights" 52-79705-69 (Continued)		a) Contact set 2,3 fails open in "STATUS" position.	a) None, due to active redundant contact set 5,6.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 5,6 fails open in "STATUS" position.	a) None, due to active redundant contact set 2,3.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 11, 12 fails open in "STATUS" position.	a) (1) Loss of Status Light Check of "AM BUS 2 PWR REG BUS 1" function in "STATUS" position. (2) Loss of Status Light Check of "SHUNT REGULATOR", "CONNECT" or "DISCONNECT".	a) (1) If AM Bus 2 Power Switch has been activated to the "REG BUS 1" position and the "BUS 2 PWR SYS LIGHTS SWITCH" is positioned to "STATUS" the AM Bus 2 Pwr Reg. Bus 1 status light does not illuminate amber. (2) Green "BUS 2 BUS SHUNT REGULATOR CONNECT" status light does not illuminate.	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	
		a) Contact set 8,7 fails open in "TEST" position.	a) Loss of status light check of "Reg Bus 2" to "CWS Power Bus 2" tie.	a) "CWS Pwr Bus 2 status" lights do not illuminate when "Bus 2 Pwr System Lights Switch" is placed in "TEST".	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	
		a) Contact set 8,9 fails open in "STATUS" position.	a) Loss of status light check of "Reg Bus 2" to "CWS Pwr Bus 2" tie.	a) If "CWS Bus 2 switch" has been positioned "on", and the "Bus 2 Pwr Sys Lights Switch" is positioned to "Status" the "CWS Pwr Bus 2 status light does not illuminate green.	a) None	a) N/A	----
		b) Contamination	b) None	b) Request ground to provide status check when required.	b) Provide status check at crew request.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, "Bus ATM Transfer Tie". 52-79705-113 (either 1 of 2)	M	a) Contact set 2,1 fails open (Open position)	a) None - Due to redundancy provided by contact set 5,4 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	- - -
		b) contamination	b) None	b) None	b) None	b) III b	
1.2.608 1.2.609		a) Contact set,5,4 fails open.	a) None - due to redundancy provided by contact set 2,1 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
		a) Contact set 2,3 fails open.	a) None - Due to redundancy provided by contact set 5,6 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
		a) Contact set 5,6 fails open. (Closed Position)	a) None - Due to redundancy provided by Contact Set 2,3 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	

DATE 31 August 1971
REVISED
REVISED

SYSTEM: ELEC. POWER
SUBSYSTEM: POWER DISTRIBUTION AND MANAGEMENT

MCDONNELL
ST. LOUIS, MISSOURI

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "BUS ATM TRANSFER TIE POWER". 61B769010-1 K6-283, 284 (either 1 of 2) 1.2.610 1.2.611	M	a) Latch coil fails open.	a) Cannot open associated transfer, AM/ATM BUS" tie.	a) Indication on Cluster amps arbit vehicle transfer to ATM" ammeter does not drop to zero. Amber "Bus ATM/Transfer tie open status light" does not illuminate, Green "Bus ATM transfer tie closed status light" does not extinguish.	a) T/M indicates that Power "OPEN" function was not accomplished.	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None - "ATM/TRANSFER CIRCUIT BREAKERS" provide back-up.	b) 1. Verify that "Power System Control Switch" is in "MANJAL" and request ground to attempt function VIA DCS. 2. Position associated ATM/TRANSFER circuit breakers to "OPEN".	b) Activate associated DCS channel at crew request.	b) III b.	
		a) Pole A fails open in the latch position.	a) None - Pole A is not used in the latch position of the relay.	a) None	a) None	a) N/A	- - -
		b) Contamination a) Pole B, spare pole.	b) None	b) None	b) None	b) III b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "Bus ATM Transfer tie Power." 61B769010-1 K6-283,284 (either 1 of 2) (continued)	M	a) Pole C fails open in latch position.	a) Loss of status light check of transfer/ATM Bus tie status.	a) Green "Bus ATM transfer tie closed status light" extinguishes amber "Bus ATM transfer tie open status light" does not illuminate	a) None	a) N/A	- - -
		b) Contamination	b) None - Due to redundancy provided by "BUS AMPS TRANSFER TO ATM AMMETER".	b) Observe "Bus Amps transfer to ATM Ammeter" for zero reading.	b) None	b) III b	
		a) Pole D fails open in latch position.	a) None - T/M indicates that function was accomplished.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
		a) Pole E, used for GSE only - no effect					
		a) Reset coil fails open.	a) Cannot re-tie affected "Transfer Bus" to associated "AM/ATM Bus".	a) 1. "Transfer to ATM ammeter" Continues to indicate zero. 2. "Bus ATM transfer tie closed status light" does not illuminate green. Amber "Bus ATM transfer tie open status light" does not extinguish.	a) T/M indicates that power tie function was not accomplished.	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) Possible reduction of ATM activities due to reduced power availability.	b) Verify that "Power System control Switch" is in MANUAL" and request ground to attempt function VIA DCS.	b) Activate associated DCS channell at crew request.	b) III b	
		a) Pole A fails open in the reset position.	a) Cannot tie affected "Transfer Bus" to associated "AM/ATM BUS".	a) "Transfer to ATM Ammeter" continues to indicate zero.	a) T/M indicates that power tie function was not accomplished.	a) N/A	- - -
		b) Contamination.	b) Possible reduction of ATM activities due to reduced power availability.	b) Verify that "Power System Control Switch" is in "MANUAL" and request ground to attempt function VIA DCS.	b) Coordinate with crew for possible reduction of ATM activities.	b) III a	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "Bus ATM Transfer Tie Power". 61B769010-1 K6-283, 284 (either 1 of 2) (continued)	M	a) Pole C fails open in the reset position.	a) Loss of "visual indication of "Bus tie" status.	a) Green "Bus ATM Transfer tie closed status light" does not illuminate. Amber "Bus ATM trans transfer tie open light" extinguishes. Both lights on during circuit test.	a) None	a) N/A	- - -
		b) Contamination	b) None - due to redundancy provided by ammeters.	b) Observe "Transfer to ATM ammeter" for proper indication.	b) None	b) III b	
		a) Pole D fails open in the reset position.	a) Loss of bi-level monitor for associated transfer, AM/ATM BUS tie.	a) None	a) T/M indicate that Bus tie function was not accomplished.	a) N/A	- - -
		b) Contamination	b) None - Due to redundancy provided by T/M monitor of bus current	b) None	b) Observe "Bus Current" T/M parameter for proper operation.	b) III b	
Relay, "Bus ATM Power Disconnect Control". K6-285, 286 52-79703-1 (either 1 of 2) 1.2.612 1.2.613	M	a) Coil fails open.	a) None - Due to active redundancy provided by opposite relay.	a) None	a) None	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress	b) None	b) None	b) None	b) III b	
		a) Pole A fails open	a) None - Due to active redundancy provided by Pole B of the opposite relay.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
		a) Pole B fails open	a) None - Due to active redundancy provided by Pole A of the opposite relay.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary "POWER DISC"	M	a) Contact set 2,1 fails open.	a) None due to redundancy provided by Contact set 5,4 of the same switch.	a) None	a) None	a) N/A	----
52-79705-119		b) Contamination	b) None	b) None	b) None	b) IIIB	
(Either 1 of 2)		a) Contact set 5,4 fails open.	a) None due to redundancy provided by Contact set 2, 1 of the same switch.	a) None	a) None	a) N/A	----
1.2.357 1.2.358		b) Contamination	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, "Power Conditioning Group Output Power Reset" 52-79703-1 (K6-198, -199, -200, -201, -203, -204, -205) (Any 1 of 8) 1.2.361, 1.2.362, 1.2.363, 1.2.364, 1.2.365, 1.2.366, 1.2.367, 1.2.368	M	a) Coil fails open.	a) Associated regulator output is not removed from associated Reg. Bus.	a) Bus monitors do not indicate a loss of voltage. In addition equipment powered by Reg. Busses continue to function.	a) T/M indicates that "Reg Busses" are fully powered.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Regulator outputs may be removed by individual "Power Conditioning Group Output Switches".	b) Position "Power Conditioning Group Output Switches" to "Off".	b) None	b) IIIB	
		a) Pole A fails open.	a) Associated regulator output is not removed from associated Reg. Bus.	a) Bus monitors do not indicate a loss of voltage. In addition, equipment powered by Reg. Busses continues to function.	a) T/M indicates that "Reg. Busses" are fully powered.	a) N/A	----
		b) Contamination Pole B - Spare	b) None. Regulator outputs may be removed by individual "Power Conditioning Group Output Switches".	b) Position "Power Conditioning Group Output Switches" to "Off".	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, "EUS PWR DISC CONTROL" 52-79703-1 (K5-255, -256) (Either 1 of 2) 1.2.614 1.2.615	M	a) Coil fails open.	a) Power is not removed from the associated "Transfer Bus".	a) (1) Associated "Transfer Bus Voltmeter" indicates other than zero. (2) Green "Bus Reg Transfer Tie Closed status light" does not extinguish. Amber "Bus Reg Transfer Tie Open light" does not illiminate.	a) T/M indicates that the "tie open" function was not accomplished.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal shock. or a) Pole A fails open. b) Contamination Pole B - Spare	b) None due to redundancy provided by associated "Bus Reg Transfer Tie Switch".	b) (1) Position associated "Bus Reg Transfer Tie Switch" to "open". (2) Position "PWR SYS CNTL SWITCH" to "CMD" and request ground to perform function via DCS.	b) Activate associated DCS channel at crew request.	b) IIIB	
Relay "EUS EMERGENCY POWER DOWN" 52-79703-43 (K5-289, -290, -291, -292) (Any 1 of 4) 1.2.616 1.2.617 1.2.618 1.2.619	TC	a) Coil fails open.	a) In the event it becomes necessary to remove power from the associated "AIRLOCK REG BUS" during terminal countdown the "Emergency Power Down Signal" has no effect.	a) None	a) T/M indicates that associated "Reg Bus" is still powered.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal shock.	a) None due to redundancy provided by DCS.	b) None	b) Activate associated DCS channels.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay "Bus EMERGENCY POWER DOWN" 52-79703-43 (K6-289, -290, -291, -292) (Any 1 of 4)	TC	a) Pole D of K6-289 or Pole D of K6-290 fail open.	a) PCG #1 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 1 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	
(Continued)		a) Pole C of K6-289 or Pole C of K6-290 fail open.	a) PCG #2 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 2 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	
		a) Pole B of K6-289 or Pole B of K6-290 fail open.	a) PCG #3 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs for the "Reg" Bus.	b) None	b) Activate associated DCS channel.	b) IIIB	
		a) Pole A of K6-289 or Pole A of K6-290 fail open.	a) PCG #4 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 4 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay "BUS EMERGENCY BUS DOWN" 52-79703-43 (K6-289, -290, -291, -292) (Any 1 of 4) (Continued)	TC	a) Pole D of K6-291 or Pole D of K6-292 fail open.	a) PCG #5 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 5 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	
		a) Pole C of K6-291 or Pole C of K6-292 fail open.	a) PCG #6 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 6 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	
		a) Pole B of K6-291 or Pole C of K6-292 fail open.	a) PCG #7 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 7 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	
		a) Pole A of K6-291 or Pole A of K6-292 fail open.	a) PCG #8 output is not removed from the associated "Reg" Bus.	a) None	a) T/M indicates that PCG 8 output was not removed from the associated Bus.	a) N/A	----
		b) Contamination	b) None, DCS provides capability for removal of individual PCG outputs from the "Reg" Busses.	b) None	b) Activate associated DCS channel.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay "AMP-HOUR INTEGRATOR 100% SOC RESET" 52-79703-51 (K6-287, 288) (Either 1 of 2) 1.2.620 1.2.621	TC	a) Latch coil fails open.	a) Affected group of Battery Charger Amp-Hour meters (4) are not reset to 100% state of charge.	a) None	a) T/M indication of affected Battery(s) state of charge is less than 100%.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None. The affected battery will continue to be charged in the automatic temperature controlled mode. Charge rate will drop to 1.5 ± .05 amps when the 100% S.O.C. condition is reached.	b) None	b) None	b) IIIB	
		a) Pole A, B, C or D of Relay K6-285 or Relay K6-286 fails open.	a) Affected Battery Chargers amp-hour meter will not be reset to 100% state of charge.	a) None	a) T/M indication of associated Batteries state of charge is less than 100%.	a) N/A	----
		b) Contamination	b) None. The affected battery will continue to be charged in the automatic temperature controlled mode. Charge rate will drop to 1.5 ± .05 amps when the 100% S.O.C. condition is reached.	b) None	b) None	b) IIIB	
		Pole E and F of K6-285 and K6-286 SPARE POLES.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary "BUS EPS SHUNT REGULATOR" 52-79705-109 (Either 1 of 2) 1.2.462 1.2.463	M	a) Contact set 2,1 fail open (DISCONN.) position.	a) Associated Shunt Regulator is not disconnected from the associated EPS Control Bus.	a) Green "Bus EPS shunt regulator connect status light" does not extinguish. Amber "Bus EPS shunt regulator disconnect status light" does not illuminate.	a) T/M indicates shunt regulator was not disconnected.	a) N/A	----
		b) Contamination	b) None. Multiple failures are necessary before mission is affected.	b) Verify "Power System Control Switch" is in "manual".	b) Maintain system surveillance.	b) IIIB	
		a) Contact set 2,3 fail open (CONNECT) position.	a) Associated Shunt Regulator is not connected to the associated EPS Control Bus.	a) Green "Bus EPS shunt regulator connect status light" does not illuminate. Amber "Bus EPS shunt regulator disconnect status light" does not extinguish.	a) T/M indicates shunt regulator was not connected.	a) N/A	----
		b) Contamination	b) Possible damage to components on the affected EPS Bus due to over-voltage.	b) Verify "Power System Control Switch" is in "manual".	b) Maintain system surveillance.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Bus Shunt Regulator" 61E769010-1 (K5-267, -268) (Either 1 of 2) 1.2.622 1.2.623	M	a) Latch coil fails open.	a) Associated Shunt Regulator is not connected to the associated EPS Control Bus.	a) Green "Bus EPS shunt regulator connect status light" does not illuminate. Amber "Bus EPS shunt regulator disconnect status light" does not extinguish.	a) T/M indicates Shunt Regulator was not connected.	a) M/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible damage to components on the affected EPS BUS due to over voltage.	b) Verify "Power System Control Switch" is in "manual".	b) Maintain system surveillance.	b) IIIB	
		a) Pole A fails open in the latch position.	a) Associated Shunt Regulator is not connected to the associated EPS Control Bus.	a) None	a) None	a) M/A	----
		b) Contamination	b) Possible damage to components on the affected EPS BUS due to over voltage.	b) None	b) None	b) IIIB	
		a) Pole B fails open in the latch position.	a) Loss of visual indication of Shunt Regulator connection status.	a) Amber "Bus EPS shunt regulator disconnect status light" extinguishes. Green "Bus EPS shunt regulator connect status light" does not illuminate.	a) None	a) M/A	----
		b) Contamination	b) None	b) Obtain ground indication of shunt regulator connection status.	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Bus Shunt Regulator"	M	a) Pole C fails open in the latch position.	a) Loss of T/M indication of Shunt Regulator connect status.	a) None	a) T/M indicates that Shunt Regulator connection was not accomplished.	a) N/A	----
61B769010-1 (K5-267, -268) (Either 1 of 2) (Continued)		b) Contamination	b) None	b) None	b) Request crew indication of Shunt Regulator connection status.	b) IIIB	
		POLE D AND E SPARE					
		a) Reset coil fails open.	a) Associated Shunt Regulator is not disconnected from the associated EPS Control Bus.	a) Green "Bus EPS shunt regulator connect status light" does not extinguish. Amber "Bus EPS shunt regulator disconnect status light" does not illuminate.	a) T/M indicates shunt regulator was not disconnected.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Multiple failures are necessary before mission is affected.	b) Verify "Power System Control Switch" is in "manual".	b) Maintain system surveillance.	b) IIIB	
		a) Pole A fails open in the reset position.	a) Associated Shunt Regulator is not disconnected from the associated EPS Control Bus.	a) None	a) None	a) N/A	----
		b) Contamination	b) Possible damage to components on the affected EPS Bus due to over voltage.	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Bus Shunt Regulator" 61B769010-1 (K6-267, -268) (Either 1 of 2) (Continued)	M	a) Pole B fails open in the reset position.	a) Loss of visual indication of Shunt Regulator connection status.	a) Green "Bus EPS shunt regulator connect status light" extinguishes. Amber "Bus EPS shunt regulator disconnect status light" does not illuminate.	a) None	a) N/A	----
		b) Contamination	b) None	b) Obtain ground indication of Shunt Regulator connection status.	b) Provide requested data.	b) IIIB	
		a) Pole C fails open in the reset position.					
		b) Contamination. NO EFFECT IN RESET POSITION.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
"SHUNT REGULATOR" 61A850006-5 (Either 1 of 2) 1.2.460,1.2.461 (Removes a defective voltage regulator from the "Reg Bus" in the event of over voltage). 1.2.624 1.2.625	M S	a) Fails to increase current flow.	a) (1) Possible temperature increase (of EPS Bus loads) due to power dissipation. (2) Possible damage to components on the EPS Bus due to over voltage.	a) Associated bus voltmeter indicates higher than normal voltage (momentairly).	a) T/M indicates higher than normal voltage on associated EPS Bus (momentarily).	a) N/A	----
		b) Defective component due to mechanical or thermal stress.	b) None due to protective fuses within each "Voltage Regulator".	b)	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
SWITCH, MOMENTARY "AM BUS POWER" 52-79705-113 (Transfer "Reg Bus" output to "AM BUS") 1.2.375 1.2.376	M	a) Contact set 2,1 fail open. (Reg. Bus 2 position).	a) Cannot manually transfer associated "Reg Bus" output to associated "AM BUS".	a) Amber "AM Bus Pwr. Reg. Bus status light" does not illuminate. Green "AM Bus Pwr. Reg Bus status light" does not extinguish.	a) T/M indicates that power transfer was not accomplished.	a) N/A	----
		b) Contamination	b) None. DCS backs up switch function.	b) Position "Pwr Sys Cntl. switch " to "CMD" and request ground to perform transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIB	
		a) Contact set 5,6 fail open. (Reg Bus 1 position).	a) Cannot manually transfer back to primary "Reg Bus".	a) Green "AM Bus Pwr., Reg Bus status light" does not illuminate. Amber "AM Bus Pwr., Reg. Bus status light" does not extinguish.	a) T/M indicates that power transfer was not accomplished.	a) N/A	----
		b) Contamination	b) None. DCS backs up Switch Function.	b) Position "Pwr. Sys. Cntl. switch" to "CMD" and request ground to perform transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "AM Bus Power" 61E769010-1 (K6-224, -225) (Either 1 of 2) 1.2.377 1.2.378	M S	a) Latch coil fails open.	a) Associated "Reg Bus" output is not transferred to associated "AM Bus".	a) Amber "AM Bus Pwr Reg Bus status light" does not illuminate. Green "AM Bus Pwr Reg Bus status light" does not extinguish.	a) T/M indicates that power transfer was not accomplished.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible omission or reduction of some of the activities dependent on "AM Bus" power.	b) Position "Pwr Sys Cntl. Switch" to "CMD" and request ground to attempt function via DCS.	b) Activate associated DCS channel at crew request.	b) IIIA	
		a) Pole A fails open.	a) Associated "Reg Bus" output is not transferred to associated "AM Bus".	a) AM/Reg Bus indicators (ammeter, voltmeter) indicate that power transfer was not accomplished.	a) T/M indicates that power transfer was not accomplished.	a) N/A	----
		b) Contamination	b) Possible omission or reduction of some of the activities dependent on the "AM Bus" power.	b) Transfer PCG's to affected "AM Bus" if required.	b) Transfer PCG's to affected "AM Bus" via DCS (during unmanned phase) if required.	b) IIIA	
		a) Pole B or Pole C fails open in latch position.	a) Loss of visual indication of associated "Reg Bus" to "AM Bus" connection.	a) When "Bus Pwr Sys light switch" is placed in "Status" amber "AM Bus Pwr, Reg Bus status light" does not illuminate. (Both lights on when switch is placed in test).	a) None	a) N/A	----
		b) Contamination Pole D fails open. No effect in latch position. Pole E, used for GSE only - No effect.	b) None, due to redundancy provided by T/M.	b) Request ground indication of "AM Bus Power Relay" status.	b) Provide requested information.	b) IIIB	
		a) Reset coil fails open.	a) Cannot transfer back to primary "Reg Bus".	a) Green "AM Bus Pwr, Reg Bus status light" does not illuminate. Amber "AM Bus Pwr Reg Bus status light" does not extinguish.	a) T/M indicates that power transfer was not accomplished.	a) N/A	----

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "AM Bus Power" 61E769010-1 (K6-224, -225) (Either 1 of 2) 1.2.377 1.2.378 (Continued)		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to PCG switching capability.	b) Position "Pwr Sys Cntl.Switch" to "CMD" and request ground to attempt transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIB	
		a) Pole A fails open in reset position.	a) Cannot transfer affected "AM Bus" back to primary "Reg Bus".	a) AM/Reg Bus indicators (ammeter, voltmeter) indicate power transfer was not accomplished.	a) T/M indicates that power transfer was not accomplished.	a) N/A	
		b) Contamination	b) None, due to PCG switching capability.	b) Transfer PCG's to affected "AM Bus" if required.	b) Transfer PCG's to affected "AM Bus" via DCS (during unmanned phase) if required.	b) IIIB	
		a) Pole B or Pole C fails open in reset position.	a) Loss of visual indication of associated "Reg Bus" to "AM Bus" connection.	a) When "Bus Pwr Sys lights switch" is placed in "Status" green "AM Bus Pwr Reg Bus Status light" does not illuminate. (Both lights on when switch is placed in test).	a) None	a) N/A	----
		b) Contamination	b) None, due to redundancy provided by T/M.	b) Request ground indication of "AM Bus Power Relay Status".	b) Provide requested information.	b) IIIB	
		a) Pole D fails open in reset position.	a) Loss of T/M indication of "AM Bus Power" relay.	a) None	a) T/M indicates that transfer to "Reg Bus 1 " was not accomplished.	a) N/A	----
		b) Contamination	b) None, due to T/M readout capability of associated parameters.	b) Provide "Status" information during manned phase.	b) Monitor associated parameters for indication of proper operation.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary "BUS REG/TRANSFER TIE" 52-79705-113 (Either 1 of 2) (Ties "Reg Bus" to "Transfer Bus") 1.2.371 1.2.372	M	a) Contact set 2,3 fail open. ("Closed" position).	a) None due to redundancy provided by contact set 5,6 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 5,6 fail open. ("Closed" positinn).	a) None due to redundancy provided by contact set 2,3 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 2,1 fail open. ("Open" position).	a) None due to redundancy provided by contact set 5,4 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 5,4 fail open. ("Open"position).	a) None due to redundancy provided by contact set 2,1 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	----
		b) Contamination	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "Bus Reg/Transfer Tie Control."	M S	a) Latch Coil fails Open.	a) Cannot remove Reg Bus Power from the associated transfer Bus.	a) Green "Bus Reg/Transfer Tie closed status light" does not extinguish. Amber "Bus Reg/Transfer Tie open status light" does not illuminate.	a) T/M indicates that power "open" function was not accomplished.	a) N/A	---
61B769010-1 K6-281, -282 (Either 1 of 2) 1.2.626 1.2.627		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A fails open. (No effect in latch position) Pole B Spare Pole	b) None. In the event it is necessary to remove power from a Transfer Bus, Regulator outputs may be removed by individual "PCG Output Switches".	b) (1) Position "PWR SYS CNTL. SWITCH" to "CMD" and request ground to attempt transfer via DCS. (2) Remove associated PCG Outputs from affected "Reg Bus" if required.	b) Activate associated DCS channel at crew request	b) III B	
		a) Pole C fails open in latch position.	a) Loss of visual indication of Bus tie status.	a) Green "Bus Reg transfer tie closed status light" extinguishes, amber "Bus Reg transfer tie open status light" does not illuminate	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by T/M	b) (1) Observe "Bus volts - TRANSFER BUS VOLTMETER" for zero indication. (2) Request ground indication of "Bus Tie" status.	b) None	b) III	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, "Bus Reg/Transfer Tie Control". 61B760010-1 K6-281, 282 (Either 1 of 2) (Continued)		Pole D fails open (T/M monitor) No effect in latch position Pole E. Used for GSE only. No effect.					
		a) Reset coil fails open.	a) Associated "Reg Bus" cannot be tied to associated "Transfer Bus".	a) "Bus Reg/Transfer Tie closed status light" does not illuminate green. "Amber Bus Reg/Transfer Tie open Status light" does not extinguish.	a) T/M indicates that power transfer was not accomplished.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible reduction of ATM and CSM activities due to reduction of available power.	b) Position "Pwr Sys Cntl. Switch" to "CMD" and request ground to attempt transfer via DCS.	b) Activate associated DCS channel at crew request.	b) III B	
		a) Pole A fails open in reset position.	a) Associated "Reg Bus" cannot be tied to associated "Transfer Bus".	a) Associated "Bus Volts - Transfer Bus Voltmeter" continues to indicate Zero.	a) T/M indicates that power transfer was not accomplished.	a) N/A	---
		b) Contamination	b) Possible reduction of ATM and CSM activities due to reduction of available power.	b) Position "Pwr Sys Cntl. Switch "to "CMD" and request ground to attempt transfer via DCS.	b) Activate associated DCS channel at crew request.	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "Bus Reg/Transfer Tie Control". 61B769010-1 K6-281, 282 (Either 1 of 2) (Continued)		a) Pole C fails open in reset position.	a) Loss of status light indication of associated Reg/Transfer tie connection.	a) "Bus Reg Transfer tie open status light" extinguishes, Bus Reg transfer tie closed status light" does not illumirate.	a) None	a) N/A	---
		b) Contamination	b) None due to redundancy provided by associated bus voltmeter and T/M indication.	b) Observe associated "Bus volts Transfer Bus voltemete" for proper indication.	b) None	b) III B	
		a) Pole D fails open in reset position.	a) Loss of T/M indication of associated "Bus Reg Transfer Tie Power Relay".	a) None	a) T/M indication of associated "Bus Reg Transfer Tie Power Relay" is open.	a) N/A	---
		b) Contamination	b) None due to redundancy provided by associated "Bus Reg/transfer tie current Sensor".	b) None	b) Observe associated current sensor output parameter for "Bus Reg transfer tie status".	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, SR "EREP Bus 1" 52-79715-13 K6-271 1.2.628	M	a) Coil fails open ("ON" Position of EREP Bus I Power control switch)	a) Cannot connect EREP Bus 1 to AM Bus 1.	a) Experiments powered by EREP Bus 1 do not operate.	a) T/M indicates that EREP Bus 1 is not powered.	a) N/A	Investigate the feasibility of providing EREP Bus tie capabilities.
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of ability to perform experiments: o Recorder I o S191 VTS o S191 SPECT IRS o S192 Scanner o EREP SUB-BUS (Panel Pwr)	b) None.	b) Maintian system survellance	b) II	
		a) Pole A fails open. ("ON" position of EREP Bus 1 Power Control Sw.)	a) Cannot connect EREP Bus 1 to AM Bus 1.	a) Experiments powered by EREP Bus 1 do not operate.	a) T/M indicates that EREP Bus 1 is not powered	a) N/A	Investigate the feasibility of providing EREP Bus tie capability.
		b) Contamination Pole B fails open, no effect in "ON" position of EREP Bus 1 power control switch.	b) Loss of ability to perform experiments: o Record I o S191 VTS o S191 SPECT IRS o S192 Scanner o EREP Sub-Bus (Panel Power)	b) None	b) Maintain system survellance.	b) II	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, SR. "EREP Bus 1" 52-79715-13 K6-271 (Continued)		a) Coil fails open "off position of EREP Bus 1 Power Control Sw).	a) Cannot disconnect EREP Bus 1 from AM Bus I.	a) Experiments powered by EREP Bus I are still powered.	a) T/M indicates that EREP Bus 1 is still powered.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A fails open. No effect in OFF position of EREP Bus I Power Control switch.	b) None	b) Power down associated equipment.	b) Maintain system surveillance.	b) III B	
		a) Pole B fails open. (OFF position of EREP Bus 1 power control switch)	a) Cannot disconnect EREP Bus 1 from AM Bus I.	a) Experiments powered by EREP Bus I are still powered.	a) T/M indicates that EREP Bus 1 is still powered.	a) N/A	
		b) Contamination.	b) None	b) Power down associated equipment.	b) Maintain system surveillance.	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, "EREP Bus 1 Power" 52-79713-13 K6-269 1.2.629	M	a) Latch coil fails open. (ON position of EREP Bus I Power Control Sw)	a) Cannot connect EREP Bus I to AM BUS I.	a) Experiments powered by EREP Bus 1 do not operate.	a) T/M indicates that EREP Bus I is not powered.	a) N/A	Investigate the feasibility of providing EREP Bus tie capabilities.
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of ability to perform experiments: o Record I o S191 VTS o S191 SPECT IRS o S192 Scanner o EREP Sub-Bus (Panel Power)	b) None	b) Maintain system surveillance.	b) II	
		a) Pole A fails open. (ON position of EREP Bus 1 Power Control sw.)	a) None due to redundancy provided by Pole B of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) III B	
		a) Pole B fails open. (ON position of EREP Bus 1 power control sw.)	a) None due to redundancy provided by Pole A of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "EREP Bus 1 Power" K6-269 (Continued)	M	a) Pole C fails open. (ON position of EREP Bus 1 power control switch)	a) Cannot disconnect EREP Bus 1 from AM Bus I	a) Power for experiments powered by EREP Bus I is still available.	a) T/M indicates that EREP Bus 1 is still powered.	a) N/A	---
		b) Contamination Pole E, used for GSE only - No effect. Pole D, spare pole.	b) None	b) None	b) Maintain system surveillance	b) III B	
		a) Reset coil fails open. (off position of the EREP Bus I Power Control Switch)	a) Cannot disconnect EREP Bus I from AM Bus I.	a) Power for experiments powered by EREP Bus I is still available.	a) T/M indicates that EREP Bus I is still powered.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None	b) None	b) Maintain system surveillance	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching, "EREP Bus 1 Power". 52-79713-13 K6-269 (Continued)	M	Pole A or Pole B fail open. (Off position of EREP Bus I Power Control Sw")					
		a) Pole C fails open. (off position of the "EREP Bus I Power Control Switch)	a) Cannot connect EREP Bus 1 to AM Bus 1.	a) Experiments powered by EREP Bus 1 do not operate	a) T/M indicates that EREP Bus I is not powered	a) N/A	Investigate the feasibility of providing EREP Bus the capability.
		b) Contamination	b) Loss of ability to perform experiments: o Record I o S191 VTS o S192 Scanner o EREP Sub-Bus (Panel Power)	b) None	b) Maintain system urvellance.	b) II	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, SR "EREP Bus 2" 52-79715-13 K6-272 1.2.630	M	a) Coil fails open (on position of EREP Bus II power control switch)	a) Cannot connect EREP Bus 2 to AM Bus 2.	a) Experiments powered by EREP Bus II do not operate	a) T/M indicates that EREP Bus II is not powered.	a) N/A	Investigate the feasibility of providing EREP bus tie capabilities.
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of ability to perform experiments: o Recorder 2 o S190 1 o S190 2 o S190 3 o S193 1 o S193 MRS	b) Power down associated equipment.	b) Maintain system surveillance	b) II	
		a) Pole A fails open. (ON position of EREP Bus 2 power control switch)	a) Cannot connect EREP Bus 2 to AM Bus 2.	a) Experiments powered by EREP Bus II do not operate.	a) T/M indicates that EREP Bus II is not powered.	a) N/A	Investigate the feasibility of providing EREP Bus tie capabilities
		b) Contamination Pole B fails open, no effect in on position of EREP Bus II power control switch.	b) Loss of ability to perform experiments: o Recorder 2 o S190 1 o S190 2 o S190 3 o S193 1 o S193 MRS	b) Power down associated equipment.	b) Maintain system surveillance	b) II	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, S.R. "EREP Bus 2" 52-77715-13 K6-272 (Continued)	M	a) Coil fails open. (OFF position of EREP Bus 2 power control sw)	a) Cannot disconnect EREP Bus 2 from AM Bus 2.	a) Experiments powered by EREP Bus 2 are still powered	a) T/M indicates that EREP Bus 2 is still powered.	a) N/A	---
		b) Defective terminal on wire subjected to mechanical or thermal stress. Pole A fails open. No effect in OFF position of EREP Bus 2 power control switch.	b) None	b) Power down associated equipment.	b) Maintain system surveillance	b) III B	
		a) Pole B fails open. (off position of EREP Bus 2 power control switch)	a) Cannot disconnect EREP Bus 2 from AM Bus 2.	a) Experiments powered by EREP Bus 2 are still powered	a) T/M indicates that EREP Bus 2 is still powered.	a) N/A	---
		b) Contamination	b) None	b) Power down associated equipment	b) Maintain system surveillance	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "EREP Bus 2 Power". 52-79713-13 K6-270 1.2.631	M	a) Latch coil fails open. (ON position of EREP Bus II Power Control Switch)	a) Cannot connect EREP Bus II to AM Bus II.	a) Experiments powered by EREP Bus 2 do not operate	a) T/M indicates that EREP Bus 2 is not powered.	a) N/A	Investigate the feasibility of providing EREP Bus tie capabilities.
		b) Defective terminal on wire subjected to mechanical or thermal stress	b) Loss of ability to perform experiments: o Recorder 2 o S190 1 o S190 2 o S190 3 o S193 1 o S193 MRS	b) None	b) Maintain system surveillance	b) II	
		a) Pole A fails open. (ON position of EREP Bus II power control switch)	a) None due to redundancy provided by Pole B of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	a) None	a) III B	
		a) Pole B fails open. (ON position of EREP Bus II power control sw)	a) None due to redundancy provided by Pole A of the same relay.	a) None	a) None	a) N/A	---
		b) Contamination	b) None	b) None	b) None	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "EREP Bus II Power". 52-79713-13 (K6-270) (Continued)	M	a) Pole C fails open. (ON position of EREP BUS II Power control switch)	a) Cannot disconnect EREP Bus II from AM Bus II.	a) Power for experiments powered by EREP Bus II is still available.	a) T/M indicates that EREP Bus II is still powered.	a) N/A	----
		b) Contamination Pole E, used for GSE only.- No effect. Pole D, spare pole	b) None	b) None	b) Maintain system surveillance	b) III B	
		a) Reset coil fails open. (OFF position of the "EREP Bus II power control switch)	a) Cannot disconnect EREP Bus II from AM Bus II.	a) Power for experiments powered by EREP Bus II is still available	a) T/M indicates that EREP Bus II is still powered	a) N/A	----
		b) Defective terminal on wire subjected to mechanical or thermal shock.	b) None	b) None	b) Maintain system surveillance	b) III B	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "EREP Bus II Power" 52-79713-13 K6-270 (Continued)	M	Pole A or Pole B fail open. (OFF position of EREP Bus II Power Control Switch) NO EFFECT IN "OFF" position. a) Pole C fails open. (OFF position of the EREP Bus I power control switch) b) Contamination.	a) Cannot connect EREP Bus II to AM Bus II. b) Loss of ability to perform experiments: o Record 2 o S190 1 o S190 2 o S190 3 o S193 1 o S193 MRS	a) Experiments powered by EREP Bus II do not operate. b) None	a) T/M indicates that EREP Bus II is not powered. b) Maintain system surveillance.	a) N/A	Investigate the feasibility of providing EREP Bus tie capability.

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch "Pwr System Cntl" 52-79705-57 (Transfers control of power system from crew to ground during unmanned phase. inhibits CRDU) 1.2.379	M	Contact set 2-1, 8-7, fail open. (No effect in "CMD" position)					
		a) Contact set 5,4 fail open in "CMD" position.	a) Manual control of PCG's #1, #2, #3, #4, Reg Bus 1 to OWS Power Bus 1, Bus 1 ATM/ TRANSFER, Bus 1 Reg Transfer Tie, Reg Bus to AM Bus tie, is not disabled.	a) PCG's and Bus functions can be manually controlled.	a) T/M indicates that DCS Control of PCG #1, #2, #3, #4, Reg Bus 1 to OWS Power Bus 1, Bus 1 ATM/Transfer, Bus 1 Reg Transfer tie, Reg Bus to AM Bus tie, was not enabled.	a) N/A	-----
		b) Contamination	b) None	b) Disable appropriate circuit breakers if necessary.	b) Coordinate with crew for proper PCG configuration prior to crew departure.	b) IIIB	
		a) Contact set 11, 10 fail open in "CMD" position.	a) Manual control of PCG's #5, #6, #7, #8, "Reg Bus 2 to OWS Power Bus 2, Bus 2 ATM/ TRANSFER, Bus 2 Reg Transfer Tie, Reg Bus to AM Bus Tie," is not disabled.	a) PCG's and Bus functions can be manually controlled.	a) T/M indicates that DCS control of PCG #5, #6, #7, #8, "Reg Bus 2 to OWS Power Bus 2, Bus 2 ATM/TRANSFER, Bus 2 Reg Transfer, Reg Bus to AM Bus Tie, was not enabled.	a) N/A	-----
		b) Contamination	b) None	b) Disable appropriate circuit breakers if necessary.	b) Coordinate with crew for proper PCG configuration prior to crew departure.	b) IIIB	
		a) Contact set 2-3, 8-9, fail open in "Manual" position.	a) Associated CRDU channels do not receive inhibit signal when system is transferred to manual control.	a) None	a) None	a) N/A	-----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Contact set 5,6 fail open in "MANUAL" position	a) Crew does not have control of PCG #1, #2, #3, #4, "Reg Bus 1 to OWS Power Bus 1, Bus 1 ATM/transfer, Bus 1 Reg Transfer Tie, Reg Bus to AM Bus Tie.	a) Crew manipulation of affected PCG control switches has no effect on PCG configuration.	a) T/M data indicates no change in system configuration following crew manipulation.	a) N/A	-----
		b) Contamination	b) None, DCS backs up Manual operation.	b) Transfer PCG Control to ground by placing "Power System Control Switch to "CMD".	b) Assume control of power system.	b) IIIB	

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SYSTEM: Elec. Power
SUBSYSTEM: Power Distribution and Management

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* COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch "Pwr System Cntl" 52-79705-57 (Continued)		a) Contact set 11,12 fail open in manual position.	a) Crew does not have control PCG #5, #6, #7, #8, "Reg Bus 2 to OWS Power Bus 2, Bus 2 ATM/Transfer, Bus 2 Reg transfer tie, Reg Bus to AM Bus tie.	a) Crew manipulation of affected PCG control switches has no effect on PCG configuration.	a) T/M data indicates no change in system configuration following crew manipulation.	a) N/A	-----
		b) Contamination	b) None, DCS backs up manual operation.	b) Transfer PCG control to ground by placing "Power System Control Switch" to "CMD".	b) Assume control of power system.	b) IIIB	
Relay, Latching, "CRDU Command Enable" 52-79703-53 (K6-117, -119, -121, -123, -125, -127, -129, -131). (Any 1 of 8) 1.2.380 1.2.387	M	a) Latch coil fails open.	a) Affected PCG can be controlled by ground or crew.	a) None	a) T/M readout of "Power Systems Control Mode" indicates "Manual" after attempted transfer.	a) N/A	-----
		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A - used for GSE only - No effect	b) None	b) None	b) None	b) IIIB	
		a) Pole B fails open in latch position (CMD)	a) Loss of T/M indication of associated "CRDU Command Enable" relay.	a) None	a) T/M indicates that associated PCG control is still in manual.	a) N/A	------
		b) Contamination	b) None	b) Provide status information during manned phase.	b) None	b) IIIB	
		a) Pole C fails open in latch position. (CMD)	a) Affected PCG cannot be transferred to manual control.	a) Crew management of PCG has no effect on PCG configuration.	a) None	a) N/A	
		b) Contamination	b) None	b) Request ground to perform required manipulation.	b) Perform crew requested manipulation.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "CRDU Command Enable" 52-79703-53 K6-117, -119, -121,-123,-125, -127,-129,-131 (Any 1 of 8) (Continued)		a) Pole D fails open in latch position (CMD)	a) Ground cannot select associated Battery Charger's secondary amp-hour meter for battery control.	a) None	a) T/M indicates that PRIMARY AMP-HOUR METER is still controlling.	a) N/A	-----
		b) Contamination	b) None, "Lo" charge mode may be selected via DCS.	b) None	b) Transfer associated Battery Charger to "Lo" charge mode.	b) IIIB	
		a) Pole E fails open in latch position (CMD)	a) Ground cannot select associated Battery Charger's primary amp-hour meter for battery control.	a) None	a) T/M indicates that secondary amp-hour meter is still controlling.	a) N/A	-----
		b) Contamination	b) None, "Lo" charge mode may be selected via DCS.	b) None	b) Transfer associated Battery Charger to "Lo" charge mode.	b) IIIB	
		a) Reset coil fails open.	a) Affected PCG cannot be crew or ground controlled. ("PWR SYS CNTL SWITCH" in "MANUAL")	a) Crew management of PCG has no effect on PCG configuration.	a) T/M readout of "Power System Control Mode" indicates "Command" after attempted transfer.	a) N/A	-----
		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole B - No effect in reset position.	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Retain control of affected PCG and perform functions at crew request.	b) IIIB	
		a) Pole C fails open in reset position (MANUAL)	a) Affected PCG cannot be controlled by ground or crew. ("PWR SYS CNTL SWITCH" in "MANUAL").	a) None	a) T/M readout of "Power System Control Mode" indicates "Manual" after attempted transfer.	a) N/A	-----
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Pole F fails open in reset position (MANUAL)	a) Affected PCG cannot be controlled by ground or crew. ("PWR SYS CNTL SWITCH" in "MANUAL")	a) Crew management of PCG has no effect on PCG configuration.	a) None	a) N/A	-----
		b) Contamination	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Retain control of affected PCG and perform functions at crew request.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "CRDU Command Enable" 52-79703-53 K6-117, -119, -121,-123,-125, -127,-129,-131 (Any 1 of 8) (Continued)		a) Pole D fails open in the reset position. (MANUAL)	a) Crew cannot select associated Battery chargers secondary AMP-Hour Meter for Battery control.	a) Associated "AMP hour integrator sec status light" does not illuminate amber.	a) T/M indicates transfer was not accomplished.	a) N/A	-----
		b) Contamination	b) None, due to redundancy provided by DCS.	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIB	
		a) Pole E fails open in the reset position. (MANUAL)	a) Crew cannot select associated Battery chargers primary AMP-Hour Meter for Battery control.	a) Associated "AMP hour integrator PRI status light" does not illuminate green.	a) T/M indicates transfer was not accomplished.	a) N/A	-----
		b) Contamination	b) None, due to redundancy provided by DCS.	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIB	
Relay, Slow Release "CRDU COMMAND" 52-79715-13 (K6-118,-120, -122,-124,-126, -128,-130,-132) (Any 1 of 8) 1.2.388 thru 1.2.395	M	a) Coil fails open (CMD position of "Power system CNTL Switch")	a) Affected PCG can be controlled by crew or ground.	a) None	a) T/M readout of "Power System Control Mode" indicates "Manual after attempted transfer.	a) N/A	-----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching, "Bus CRDU Command Enable." 52-79703-53 (K6-257, 259) (Either 1 of 2) (Continued)		a) Pole B fails open in the latch position.	a) Loss of T/M indication of associated "Bus CRDU Command Enable" relay.	a) None	a) T/M indicates that associated "Bus control is still in manual.	a) N/A	------
		b) Contamination.	b) None	b) Provide status information during manned phase.	b) None	b) None	
		a) Pole C fails open in the latch position.	a) Affected Bus Tie functions cannot be transferred to Manual control.	a) Crew management of "Bus Tie" functions has no effect.	a) T/M readout of "Bus Tie" functions indicate "Command" after attempted transfer.	a) N/A	------
		b) Contamination.	b) None	b) Request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
		a) Pole D fails open in latch position.	a) Associated Reg Bus to OWS Bus tie function cannot be transferred to ground command.	a) None	a) T/M readout of "Bus Tie" function indicate "Manual" after attempted transfer.	a) N/A	------
		b) Contamination.	b) None	b) Retain control of "Bus Tie" function during manned phases.	b) None	b) IIIb	
		Pole E or F - No effect in latch position.					
		a) Reset coil fails open.	a) Affected "Bus Tie" functions cannot be controlled by ground or crew.	a) Crew manipulation of "Bus Tie" functions has no effect on system configuration.	a) T/M readout of "Bus Tie" functions indicate command after attempted transfer.	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) Position "PWR SYS CNTL SWITCH' back to "CMD" and request ground to perform function via DCS.	b) Perform "Bus Tie" functions at crew request.	b) IIIb	
		Pole B - No effect in reset position.					
		a) Pole C fails open in reset position.	a) Affected "Bus Tie" functions cannot be controlled by ground or crew.	a) Crew manipulation of "Bus Tie" functions has no effect on system configuration.	a) T/M readout of associated "Bus Tie" function indicate "Manual" after attempted transfer.	a) N/A	------
		b) Contamination.	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform "Bus Tie" functions at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching, "Bus CRDU Command Enable." 52-79703-53 (K6-257, 259) (Either 1 of 2) (Continued)		a) Pole D fails open in reset position.	a) None, unless OWS Bus power has been disconnected from Reg. Bus, in that event, affected OWS Bus cannot be reconnected to associated Reg Bus by ground or crew.	a) None, unless it is desirable to remove power from associated "OWS Bus" in that event, associated "OWS Power Bus status lights" do not change state.	a) None	a) N/A	------
		b) Contamination.	b) None, due to active redundant "Bus" Power.	b) Deactivate associated "OWS Power Bus Feeder Circuit Breaker."	b) None	b) IIIb	
		a) Pole E fails open in reset position.	a) Affected "Bus ATM/Transfer" and "Bus Reg/Transfer tie function cannot be controlled by ground or crew.	a) Crew attempt to complete "Tie" function has no effect.	a) T/M readout of "Tie" function is "open" after attempted "Tie".	a) N/A	------
		b) Contamination.	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
		a) Pole F fails open in reset position.	a) Affected "AM Bus Tie" function cannot be controlled by ground or crew.	a) Crew attempt to complete "Tie" function has no effect.	a) T/M readout of "Reg Bus" to "AM Bus" tie indicates no change.	a) N/A	------
		b) Contamination.	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
Relay, Slow Release "Bus Command" 52-79715-11 (K6-258, -260) (Either 1 of 2) 1.2.399, 1.2.400.		a) Coil fails open. (Manual position of "Power system cntl switch).	a) Affected "Bus Tie" function cannot be controlled by ground or crew.	a) Crew attempt to complete "Bus Tie" functions has no effect.	a) T/M readout of "Tie" function is "open" after attempted "Tie".	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release "Bus Command" 52-79715-11 (K6-258, -260) (Either 1 of 2) 1.2.399, 1.2.400 (Continued)		a) Pole B fails open (Manual position of "Power system cntl switch.")	a) Affected "Bus Tie" function cannot be controlled by ground or crew.	a) Crew attempt to complete "Bus Tie" functions has no effect.	a) T/M readout of "Tie" functions is "open" after attempted "Tie".	a) N/A	
		b) Contamination.	b) None	b) Position "PWR SYS CNTL SWITCH" back to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	
		Pole A - No effect in "manual" position of "Power System CNTL Switch"					
		a) Coil fails open (CMD position of "Power System Cntl Switch.")	a) "Bus Tie" function can be controlled by ground or crew.	a) None	a) T/M readout of "Power System Control Mode" indicates "Manual" after attempted transfer.	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	
		a) Pole A fails open. (CMD position of "Power System Cntl Switch)	a) "Bus Tie" can be controlled by ground or crew.	a) None	a) T/M readout of "Power System Control Mode" indicates "Manual" after attempted transfer.	a) N/A	------
		b) Contamination.	b) None	b) None	b) None	b) IIIb	
		Pole B - No effect in "CMD" position of "Power System Cntl Switch."					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary. "ELEC. GND." 52-79705-117 (Connects Bus Returns to AM Structure Ground)	M	a) Contact set 2, 1 fail open.	a) "Ground Relay #1 does not operate.	a) Amber "ELEC GND AIRLOCK STATUS LIGHT" does not illuminate.	a) T/M indicates that "#1 GROUND RELAY" did not operate.	a) N/A	------
		b) Contamination	b) None due to redundancy provided by Contact set 5,4 of the same switch and "Ground Relay #2".	b) Request T/M indication of #1 and #2 Ground Relay status.	b) Provide requested information.	b) IIIb	
1.2.632		a) Contact set 5, 4 fail open.	a) "GROUND RELAY #2" does not operate.	a) None	a) T/M indicates that "#2 GROUND RELAY" did not operate.	a) N/A	------
		b) Contamination	b) None due to redundancy provided by contact set 2, 1 of the same switch, and "Ground Relay #1".	b) None	b) Maintain system surveillance.	b) IIIb	
RELAY, LATCHING, #1 and #2 GROUND. 52-79713-3 K6-133, -232	M	a) Latch Coil fails open.	a) None	a) Green "ELEC GND CEM STATUS LIGHT" does not extinguish. Amber "ELEC GND AIRLOCK STATUS LIGHT" does not illuminate.	a) T/M indicates that "#1 GROUND RELAY" did not operate.	a) N/A	------
1.2.633, 1.2.634		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundancy provided by opposite relay.	b) Request T/M indication of #1 and #2 GROUND RELAY status.	b) Provide requested information.	b) IIIb	
	M	a) Pole A fails open in latch position.	a) Loss of T/M indication of affected GROUND RELAY.	a) None	a) T/M indicates that affected GROUND RELAY did not transfer.	a) N/A	------
		b) Contamination Pole B - No effect used for GSE only.	b) None	b) None	b) None	b) IIIb	

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SYSTEM: Elec. Power
SUBSYSTEM: Power Distribution and Management

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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
RELAY, LATCHING, #1 AND #2 GROUND. 52-79713-3 K6-133, -232	M	a) Pole C fails open in latch position.	a) Loss of visula indication of "GND" transfer status. (#1 RELAY ONLY)	a) Green "ELEC GND CSM status light" extinguishes. Amber "ELEC GND AIRLOCK STATUS LIGHT" does not illuminate.	a) None	a) N/A	------
(Continued)		b) Contamination	b) None due to redundancy provided by T/M.	b) Request ground indication of "GND" transfer status.	b) Provide requested information.	b) IIIb	
		a) Pole D, E, or F fail open. (AIRLOCK POSITION OF "ELEC GND SWITCH")	a) None due to active redundant contacts.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Can not transfer "GND" to CSM.	a) Amber "ELEC. GND AIRLOCK STATUS LIGHT" does not extinguish. Green "ELEC. GND CSM STATUS LIGHT" does not illuminate.	a) T/M indicates that GND transfer was not accomplished.	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) Position "PWR SYS CNTL SWITCH" to "CMD" and request ground to attempt transfer VIA DCS.	b) Activate associated DCS command at crew request.	b) IIIb	
	M	a) Pole A fails open - no effect in Reset position.					
		a) Pole C fails open in reset position.	a) Loss of visual indication of "GND" transfer status.	a) Amber "ELEC GND AIRLOCK STATUS LIGHT" does not illuminate.	a) None	a) N/A	------
		b) Contamination	b) None due to redundancy provided by T/M.	b) Request T/M indication of GND transfer status.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, (Voltage Regulator output to "EPS Control Bus" 6107690009-5 (Any 1 of 8) 1.2.401, 1.2.402, 1.2.403, 1.2.404, 1.2.405, 1.2.406, 1.2.407, 1.2.408.	M S	a) Short	a) Loss of Diode isloation of the affected voltage regulator.	a) None	a) None	a) N/A	------
		b) Contamination.	b) None unless a failure occurs on the associated EPS Control Bus.	b) None	b) None	b) IIIb	
		a) Opens	a) Loss of voltage regulator output to the associated EPS Control Bus.	a) Associated batteries ammeter indicates reduced current drain during dark periods, associated solar array's ammeter indicate a reduction in output current during daylight periods.	a) T/M indicates reduced current drain from associated battery during dark periods and a reduction in current from the associated solar array during daylight periods.	a) N/A	------
		b) Defective bond subjected to mechanical or thermal stress.	b) None, Six of Eight PCG's are considered necessary for mission success.	b) Perform real time EPS evaluation and manage EPS to allow for loss of one PCG.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
POTENTIOMETER "Bus Reg Adjust" 61B769008-15 (Either 1 of 2) 1.2.411, 1.2.412	M	a) Wiper fails to make contact.	a) Degraded linearity for adjustment of bus voltage made with affected potentiometer.	a) "Reg Bus Voltmeter" indicates change in voltage on the affected bus, "Cluster Ammeter" and "Battery Ammeter" indicate change in load sharing conditions if busses are in parallel configuration.	a) T/M indicates change in voltage on the affected bus, "Cluster Ammeter" and "Battery Ammeter" indicate change in load sharing conditions if busses are in parallel configuration.	a) N/A	------
		b) Contamination	b) None, active redundant element in potentiometer retains full adjust range.	b) Readjust affected potentiometer to obtain desired bus voltage and load sharing if deemed necessary.	b) None	b) IIIb	
POTENTIOMETER "Regulator Control Fine Adj." 61B769008-11 (Any 1 of 2) 1.2.413 thru 1.2.420	M	a) Wiper fails to make contact.	a) Degraded linearity for adjustment of associated PCG output voltage.	a) Associated battery's ammeter indicates change in current drain during dark periods.	a) T/M indicates change in associated battery's current drain during dark periods. Associated ammeter indicates resultant change in battery's state of charge with time.	a) N/A	------
		b) Contamination	b) None, active redundant element in potentiometer retains full adjustment range.	b) Readjust affected potentiometer to obtain desired load sharing if deemed necessary.	b) Initiate crew adjustment of affected fine adjustment potentiometer to obtain desired load sharing between PCG's.	b) IIIb	
AMMETER, "BUS AMPS PCG TOTAL" 61B810002-89 (1 and 2) (Either 1 of 2) 1.2.421, 1.2.422	M	a) Erroneous Reading.	a) Degraded capability to immediately assess the amount of current drain on the associated "Reg Bus".	a) Unable to obtain correct current reading from the affected meter.	a) None	a) N/A	------
		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	c) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
AMMETER, "BUS AMPS TRANSFER TO CSM" 61B810002-97 (1 and 2) (Either 1 of 2)	M	a) Erroneous Reading.	a) Degraded capability to immediately assess the amount of current drain from the associated "Transfer Bus" to its corresponding "CSM BUS".	a) Unable to obtain correct current reading from the affected meter.	a) None	a) N/A	------
1.2.635, 1.2.636		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIb	
AMMETER "BUS AMPS TRANSFER TO ATM" 61B810002-169 (1 and 2)	M	a) Erroneous Reading.	a) Degraded capability to immediately assess the amount of current drain from the associated "Transfer Bus" to its corresponding "ATM BUS".	a) Unable to obtain correct current reading from the affected meter.	a) None	a) N/A	------
1.2.423, 1.2.424		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIb	
Voltmeter "Bus Volts Reg Bus" 61B810002-11 (1 and 2) (Either 1 of 2)	M	a) Erroneous Reading.	a) Degraded capability to immediately assess the affected "Reg Bus" voltage level and to adjust it with the associated "Reg Bus Potentiometer".	a) Unable to obtain correct voltage reading from the affected voltmeter.	a) Provide requested data and support crew during adjustment of "Reg Bus" voltage.	a) N/A	------
1.2.428, 1.2.429		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) None	b) IIIb	
Voltmeter "Bus Volts - Transfer Bus" 61B810002-11 (1 and 2) (Either 1 of 2)	M	a) Erroneous Reading.	a) Degraded capability to immediately assess the affected "Transfer Bus" voltage level.	a) Unable to obtain correct voltage reading from the affected "Transfer Bus" voltmeter.	a) None	a) N/A	------
1.2.430, 1.2.431		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provided requested data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Ammeter "OWS BUS" 61B810002-191 (1 and 2) (Either 1 of 2) 1.2.432, 1.2.433	M	a) Erroneous Reading.	a) Degraded capability to immediately assess the amount of current drain from the associated "Reg Bus" to the corresponding "OWS" Bus.	a) Unable to obtain correct current reading from the affected meter.	a) None	a) N/A	------
		b) Rough pivot subjected to mechanical stress.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIb	
Circuit Breaker Magnetic, "Bus Ammeters" 6-166, -167 52-79721-322 (Either 1 of 2) 1.2.440, 1.2.441	M	a) Opens before break current is exceeded.	a) (1) "Bus 1" (Bus 2) ATM/ Transfer, CSM/Transfer, and Reg/Transfer tie current sensor will not receive power. (2) Crew cannot monitor associated bus current being supplied (or drawn) to ATM (from ATM).	a) (1) Cluster amps ATM/Transfer and CSM/Transfer ammeter (1 or 2) indicate zero. (2) Associated circuit breaker(s) bat handle is in the "open" position.	a) Loss of T/M monitor capability of "Bus 1 (Bus 2) ATM Transfer, and Reg/ Transfer" current drain.	a) N/A	------
		b) Internal defect causes coil to short to ground.	b) None, T/M data available.	b) None	b) Request desired information from crew during manned phase.	b) IIIb	
Circuit Breaker Magnetic, "Power Disconnect -AM-1 and -AM-2" 6-125, 6-126 52-79721-322 (Either 1 of 2) 1.2.442, 1.2.443	M	a) Opens before break current is exceeded.	a) None due to redundancy provided by opposite circuit breaker.	a) Affected circuit breakers bat handle indicates "OPEN".	a) None	a) N/A	------
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breakers bat handle to "CLOSED".	b) None	b) IIIb	
Circuit Breaker Magnetic, "Power Disconnect ATM -1 or -2" 6-205, 6-206 52-79721-322 (Either 1 of 2) 1.2.637,1.2.638	M	a) Opens before break current is exceeded.	a) None due to redundancy provided by opposite circuit breaker.	a) Affected circuit breakers bat handle indicates "OPEN".	a) None	a) N/A	------
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breakers bat handle to "CLOSED".	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT - a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, "Transfer Bus Tie Cntl -1 and -2" 6-124, -127 52-79721-322 (Either 1 of 2) 1.2.444, 1.2.445	M	a) Opens before break current is exceeded.	a) None due to redundancy provided by opposite circuit breaker.	a) Affected circuit breakers bat handle indicates "OPEN".	a) None	a) N/A	-------
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breakers bat handle to "CLOSED".	b) None	b) IIIb	
Circuit Breaker Magnetic, "Power System Control 1 and 2" 6-1, -2 52-79721-322 (Either 1 of 2) 1.2.452, 1.2.453	M	a) Opens before break current is exceeded.	a) Cannot inhibit CRDU.	a) (1) Ground can control PCG's and Bus tie functions even though "PWR SYS CNTL SWITCH" is in "MANUAL". (2) Associated circuit breakers bat handle is in the open position.	a) None	a) N/A	-------
		b) Internal defect causes coil to short to ground.	b) None	b) None	b) None	b) IIIb	
Circuit Breaker Magnetic, "Earth Resources Cntl 1 and Cntl 2" 6-195, -196 52-79721-322 (Either 1 of 2) 1.2.639, 1.2.640	M	a) Opens before break current is exceeded.	a) Experiments powered by the associated EREP bus do not operate.	a) (1) Experiments powered by associated EREP bus fail to operate. (2) Associated circuit breakers bat handle is in the "OPEN" position.	a) None	a) N/A	----------
		b) Internal defect causes coil to short to ground.	b) Loss of associated experiment data.	b) Position circuit breaker bat handle to closed.	b) None	b) IIIb	
Fuse, "Volt Sense Bus 1, Bus 2" 6-128, -129 52-79720-322 (Either 1 of 2) 1.2.446, 1.2.447	M	a) Opens prematurely.	a) Loss of Bus sense voltage signal to voltage regulators. Regulator does not compensate for voltage drop between regulator output and the Bus. The level of full load adjustment range is reduced to 22 to 26 VDC.	a) None	a) None	a) N/A	-------
		b) Vibration induced defect causes fuse to open.	b) Possible increase in adjustments necessary to manage EPS properly.	b) None	b) None	b) IIIb	

* COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Fuse, "Voltmeter Bus 1, Bus 2" 6-130, -131 52-79720-322 (Either 1 of 2) 1.2.448, 1.2.449	M	a) Opens prematurely.	a) Loss of visual indication of associated "Reg Bus" voltage.	a) Unable to obtain voltage reading from the affected voltmeter.	a) None	a) N/A	-------
		b) Vibration induced defect causes fuse to open.	b) None due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIb	
Fuse, "C and W Sense Bus 1, Bus 2" 4-30, -31 (Either 1 of 2) 1.2.450, 1.2.451	M	a) Opens prematurely.	a) Loss of "C and W" monitoring capability of affected bus voltage.	a) C and W System will issue low voltage warning.	a) None	a) N/A	------
		b) Vibration induced defect.	b) None, bus voltmeters will indicate true voltage.	b) Observe "Bus Voltmeter", reset C and W as required.	b) Inform crew of T/M indication of bus voltage if required.	b) IIIb	
Circuit Breaker, Magnetic, "Reg Bus Tie" 6-194, -143 52-79721-310 (Either 1 of 2) 1.2.456, 1.2.457	M	a) Opens before break current is exceeded.	a) None, due to redundant circuit breaker.	a) Associated circuit breakers bat handle is in the open position.	a) None	a) N/A	-------
		b) Internal defect causes coil to short to ground.	b) None	b) Coordinate with ground for possible PCG configuration change.	b) Provide requested data.	b) IIIb	
Fuse, "Voltmeter Protection, Transfer Bus 1 and Bus 2" (6-7, -8) 52-79720-322 (Either 1 of 2) 1.2.458, 1.2.459	M	a) Opens prematurely.	a) Degraded ability to immediately assess associated "Transfer Bus" voltage.	a) Unable to obtain voltage reading from affected voltmeter.	a) None	a) N/A	------
		b) Vibration induced defect.	b) None, due to redundancy provided by T/M.	b) Request required data from ground.	b) Provide requested data.	b) IIIb	
Current Sensor 61J769012-3, -1 (Any 1 of 6) 1.2.466, 1.2.467 1.2.468, 1.2.469 1.2.470, 1.2.471	M S	a) Erroneous output.	a) Cannot immediately assess the amount of current being drawn from the affected Bus.	a) Unable to obtain correct current readily from the affected ammeter.	a) T/M indication of affected Bus current will be other than nominal.	a) N/A	------
		b) Defective component subjected to mechanical or thermal stress.	b) None, due to monitoring capability provided by Battery Charger AMP hour meter.	b) (1) Request ground indication of affected parameter. (2) Monitor AMP-hour meters for nominal current drain.	b) Monitor AMP-hour meters for nominal current drain.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, "Transfer to CSM Bus MNA Feeders" 52-79721-312 (Any 1 of 10) 6-90, -91, -92, -93, -94, 6-49, -50, -51, -52, -53 1.2.530 thru 1.2.539	M	a) Opens before break current is exceeded.	a) None, the remaining (4 per bus) power feeders provide adequate power capabilities to meet CSM electrical power requirements.	a) Affected circuit breaker(s) "Bat Handle" indicates open.	a) None	a) N/A	-------
		b) Internal defect causes coil to short to ground.	b) None	b) Position affected circuit breaker(s) to "closed" if required.	b) None	b) IIIb	
Circuit Breaker, Magnetic, "ATM to Transfer Bus Feeder" 52-79721-314 (Any 1 of 36) 1.2.473, 1.2.490 1.2.473A, 1.2.490A	M S	a) Opens before break current is exceeded.	a) None due to active redundancy provided by additional circuit breakers.	a) Affected circuit breaker "Bat Handle" is in the "OPEN" position.	a) None	a) N/A	-------
		b) Internal defect causes coil to short to ground.	b) None	b) Position affected circuit breakers handle to the closed position if required.	b) None	b) IIIb	
Circuit Breaker Magnetic, "Pwr Sys Status Lights -1 and -2" 52-79721-322 (Either 1 of 2) 1.2.641, 1.2.642	M	a) Opens before break current is exceeded.	a) Cannot visually assess associated power system status.	a) (1) Affected status lights do not illuminate, when associated "PWR SYS Status Lights" switch is positioned to "STATUS" or "TEST". (2) Circuit breaker "Bat Handle" is in the "OPEN" position.	a) None	a) N/A	-------
		b) Internal defect causes coil to short to ground.	b) None, due to redundancy provided by T/M.	b) (1) Request ground indication of desired status. (2) Position affected circuit breaker(s) "Bat Handle" to the "closed position".	b) Provide requested information.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release "Deploy Bus Arm" K1-4 52-79715-13 1.2.493	L M	a) Coil fails open. (Arm position of OWS switch selector.)	a) Attempted arming of deploy buses by OWS switch selector has no effect.	a) None	a) T/M indicates that deploy buses were not armed.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole A fails open. b) Contamination	b) None, due to redundancy provided by DCS.	b) None	b) Activate associated DCS channel.	b) IIIb	
		a) Pole B fails open.	a) Cannot remove power from the "deploy buses" via the "OWS switch selector".	a) None	a) T/M indicates that power was not removed from the deploy buses.	a) N/A	---
		b) Contamination	b) None, due to redundancy provided by DCS.	b) None	b) Activate associated DCS channel.	b) IIIb	
		a) Coil fails open. (Safe position of OWS switch selector.)	a) Cannot remove power from the "deploy buses" via the "OWS switch selector".	a) None	a) T/M indicates that power was not removed from the deploy buses.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by DCS.	b) None	b) Activate associated DCS channel.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release "Deploy Bus Arm" K1-3 52-79715-13 1.2.494	L M	a) Coil fails open. (DCS "ARM" position.)	a) Attempted arming of "deploy buses" via DCS has no effect.	a) None	a) T/M indicates that deploy buses were not armed.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole A fails open. b) Contamination	b) None, function is required only in the event of prior failure. In addition, manual switch may be manually positioned to "ARM".	b) Position "Deploy Bus Arm Switch" to "ARM", if required.	b) Maintain system surveillance.	b) IIIb	
		a) Pole B fails open.	a) Cannot remove power from the "Deploy Buses" via DCS.	a) None	a) T/M indicates that power was not removed from the deploy buses.	a) N/A	---
		b) Contamination	b) None, power may be removed by positioning associated circuit breakers to "OPEN".	b) Position associated circuit breakers to "OPEN", if required.	b) Coordinate with crew for required action.	b) IIIb	
		a) Coil fails open. (DCS "SAFE" position.)	a) Cannot remove power from the "Deploy Buses" via DCS.	a) None	a) T/M indicates that power was not removed from the deploy buses.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, power may be removed by positioning associated circuit breaker to "OPEN".	b) Position associated circuit breakers to "OPEN", if required.	b) Coordinate with crew for required action.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "Deploy Bus Arm" K1-2 52-79713-15 1.2.496	L M	a) Latch Coil fails open.	a) Attempted arming of deploy busses by OWS switch selector has no effect.	a) None	a) T/M indicates that deploy busses were not armed.	a) N/A	-----
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in reset position. b) Contamination	b) None due to redundancy provided by DCS.	b) None	b) Activate associated DCS channel.	b) IIIb	
		a) Pole D fails open.	a) Deploy Bus I does not receive arming voltage.	a) None	a) T/M indicates that deploy Bus I is not armed.	a) N/A	-----
		b) Contamination	b) None due to redundancy provided by DCS.	b) None	b) Activate associated DCS channel.	b) IIIb	
		a) Pole F fails open.	a) Deploy Bus II does not receive arming voltage.	a) None	a) T/M indicates that deploy Bus II is not armed.	a) N/A	-----
		b) Contamination.	b) None due to redundancy provided by DCS.	b) None	b) Activate associated DCS channel.	b) IIIb	
		a) Reset coil fails open.	a) Cannot remove power from the deploy busses via the "OWS Sw. Selector".	a) None	a) T/M indicates that power was not removed from the deploy busses.	a) N/A	-----
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in latch position b) Contamination Pole D and F fails open. - No effect in reset position.	b) None. Power may be removed by positioning associated circuit breakers to "Open."	b) Position associated circuit breakers to Open if required.	b) Co-ordinate with crew for required action.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION a) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "Deploy Bus Arm" K1-1 52-79713-15 1.2.495	L M	a) Latch coil fails open.	a) Attempted arming of "Deploy Busses" via DCS has no effect.	a) None	a) T/M indicates that "Deploy Busses" were not armed.	a) N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in reset position. b) Contamination	b) None. Function is required only in the event of prior failure. In addition manual switch may be manually positioned to "arm".	b) Position "Deploy Bus Arm Switch" to "Arm" if required.	b) Maintain system surveillance.	b) IIIb	
		a) Pole D fails open	a) Attempted arming of "Deploy Bus I" via DCS has no effect.	a) None	a) T/M indicates that "Deploy Bus I" did not receive arming voltage.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None. Function is required only in the event of prior failure. In addition manual switch may be manually positioned to "Arm".	b) Position "Deploy Bus Arm Switch" to "Arm" if required.	b) Maintain system surveillance.	b) IIIb	
		a) Pole F fails open.	a) Attempted arming of "Deploy Bus II" via DCS has no effect.	a) None	a) T/M indicates that "Deploy Bus II" did not receive arming voltage.	a) N/A	- - - - - - - - - -
		b) Contamination.	b) None. Function is required only in the event of prior failure. In addition manual switch may be manually positioned to "Arm".	b) Position " Deploy Bus Arm Switch" to "Arm" if required.	b) Maintain system surveillance.	b) IIIb	
		a) Reset coil fails open.	a) Cannot remove power from the Deploy Busses via the DCS.	a) None	a) T/M indicates that power was not removed from the Deploy Busses.	a) N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in latch position b) Contamination. Pole D and F fail open. No effect in reset position.	b) None. Power may be removed by positioning associated circuit breakers to "OPEN".	b) Position associated circuit breakers to "OPEN" if required.		b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch toggle, "Deploy Bus Arm Switch"	L M	a) Contact set 8,7 fails open ("CMD" Position of "Deploy Bus Arm Switch".	a) Attempted arming of Deploy Busses by I.U. has no effect.	a) None	a) T/M indicates that Deploy busses were not armed.	a) N/A	---
52-79705-75		b) Contamination	b) None due to redundancy provided by D.C.S.	b) None	b) Activate associated D.C.S. channel.	b) IIIB	
1.2.472		a) Contact set 5,4 fails open. ("CMD position of "DEPLOY BUS ARM SWITCH").	a) Attempted arming of Deploy Busses utilizing DCS has no effect.	a) None	a) T/M indicates that Deploy busses were not armed.	a) N/A	---
		b) Contamination.	b) None, function is required only the event of a prior failure.	b) None	b) Attempt to re-cycle OWS switch selector.	b) IIIB	
		a) Contact set 2,3 fails open ("ARM" position of "DEPLOY BUS ARM SWITCH")	a) None due to redundancy provided by contact set 11, 12 of the same switch.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None	b) None	b) None	b) IIIB	
		a) Contact set 11, 12 fails open.	a) None due to redundancy provided by contact set 2,3 of the same switch.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic "Deploy Bus Arm - PRI." 1-2 52-79721-322 1.2.550	L M	a) Opens before break current is exceeded.	a) None due to redundant circuit breaker. (Deploy Bus Arm - SEC)	a) Circuit breaker "Bat Handle" indicates open.	a) None	a) N/A	----
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breaker to "closed" if required.	b) None	b) IIIB	
Circuit Breaker Magnetic "Deploy Bus Arm - SEC". 1-3 52-79721-322 1.2.551	L M	a) Open before break current is exceeded.	a) None, due to redundant circuit breaker. (Deploy Bus Arm - PRI)	a) Circuit breaker "Bat Handle" indicates open.	a) None	a) N/A	----
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breaker to "Closed" if required.	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release, "Sequential Bus Arm".	L	a) Coil fails open "CMD" position of sequential bus arm switch.	a) None Due to active redundancy provided by opposite relay.	a) None	a) None	a) N/A	---
52-79715-2 K1-37, -38 Either 1 of 2 1.2.[illegible] 1.2.[illegible]		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIB	
		a) Pole A fails open.	a) None due to active redundancy provided by Pole A of the opposite relay.	a) None	a) None	a) [illegible]	---
		b) Defective terminal or wire subject to mechanical or thermal stress.	b) None	b) None	b) None	b) [illegible]	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release "Sequential Bus Arm". 52-79715-13 K1-37, -38 Either 1 of 2 Continued 1.2.49f 1.2.49g		a) Coil fails open "SAFE" position of sequential bus arm switch".	a) Cannot remove power from "Sequential Busses".	a) None	a) T/M indicates that the Sequential Busses are still powered.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, associated circuit breakers may be positioned "OPEN".	b) Position associated circuit breakers to "OPEN" at ground request.	b) Request crew to position affected circuit breakers to "OPEN" if required.	b) IIIB	
		a) Pole B fails open.	a) Cannot remove power from "Sequential Busses".	a) None	a) T/M indicates that the sequential busses are still powered.	a) N/A	---
		b) Contamination.	b) None associated circuit breakers may be positioned to "OPEN".	b) Position associated circuit breakers to "OPEN" at ground request.	b) Request crew to position affected circuit breakers to "OPEN" if required.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "Sequential Bus Arm". 52-79713-15 K1-39 1.2.499	L	a) Latch coil fails open.	a) None due to redundancy provided by opposite relay. (K1-40)	a) None	a) None until T/M data reduction is accomplished.	N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in reset position. b) Contemination.	b) None. OWS switch selector provide arming signal to opposite relay (K1-40) 200 MS later.	b) None	b) None	b) IIIb	
		a) Pole D or F fails open in latch position.	a) None due to redundancy provided by Pole D or F of the opposite relay. (K1-40)	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None. OWS switch selector provides arming signal to opposite relay (K1-40) 200 MS later.	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Power is not removed from the sequential busses.	a) None	a) T/M indicates that sequential busses are still powered.	a) N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in latch position. b) Contamination	b) None	b) Position associated circuit breakers to "OPEN" at ground request.	b) Request crew to position affected circuit breakers to "OPEN" if required.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "Sequential Bus Arm". 52-79713-13 (K-40) 1.2.500	L	a) Latch coil fails open.	a) None due to redundancy provided by opposite relay. (K1-39)	a) None	a) None until T/M data reduction is accomplished.	a) N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected OR a) Pole C fails open in reset position. b) Contamination	b) None. OWS switch selector provides arming signal to opposite Relay (K1-39) 200 MS later.	b) None	b) None	b) IIIb	
		a) Pole D or F fails open in latch position.	a) None due to redundancy provided by Pole D or F of the opposite relay.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None. OWS switch selector provides arming signal to opposite relay (K1-39) 200 MS later.	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Power is not removed from the sequential busses.	a) None	a) T/M indicates that sequential busses are still powered.	a) N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress. OR a) Pole C fails open in latch position. b) Contamination	b) None	b) Position associated circuit breakers to "OPEN" at ground request.	b) Request crew to position affected circuit breakers to "OPEN" if required.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle "Sequential Bus Arm" 52-79705-57 1.2.643	L M	a) Contact set 5,4 fails open. (Safe position)	a) Power is not removed from the "sequential busses".	a) None	a) T/M indicates that sequential busses are still powered.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None	b) Position associated circuit breakers to "OPEN" at ground request	b) Request crew to position affected circuit breakers to "OPEN" if required.	b) IIIb	
		a) Contact set 8,7 fails open. (Safe position)	a) Power is not removed from the "sequential busses".	a) None	a) T/M indicates that sequential busses are still powered.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None	b) Position associated circuit breaker to "OPEN" at ground request.	b) Request crew to position affected circuit breakers to open if required.	b) IIIb	
		a) Contact set 5,6 fails open. (CMD position)	a) None due to active redundant contact set 8,9 of the same switch.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 8,9 fails open. (CMD position)	a) None due to active redundant contact set 5,6 of the same switch.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None	b) None	b) None	b) IIIb	
Switch Momentary "OWS Bus 1" or "OWS Bus 2." 52-79705-109 (Either 1 of 2) 1.2.501 1.2.502	M	a) Contact set 2,3 fails open. "ON position"	a) (1) Associated AM Bus Power is not applied to the associated "OWS Power Bus". (2) "Emergency OWS LT. Sensor Pwr" is not available from the affected Bus.	a) Green "OWS Power Bus Status Light" does not illuminate. "Amber" "OWS" Power Bus Status Light" does not extinguish.	a) T/M indicates that associated "OWS Bus" is not powered.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None DCS backs up switch function.	b) Switch Bus Power System Control to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Momentary "OWS Bus 1" or Bus 2"	M	a) Contact set 2, 1 fails open. "OFF POSITION"	a) Associated AM Bus Power cannot be removed from the associated "OWS Power Bus."	a) Green "OWS Power Bus status light" does not extinguish. Amber "OWS Power Bus status light" does not illuminate.	a) T/M indicates the power was not removed from associated "OWS Bus."	a) N/A	---
52-79705-109 (Either 1 of 2) 1.2.501, 1.2.502 Continued		b) Contamination	b) None. DCS backs up switch function.	b) Switch Bus Power system to "CMD" and request ground to perform function via DCS.	b) Perform function via DCS at crew request.	b) IIIB	
Relay Latching "OWS POWER #1 or #4". K1-5, -8	M S	a) Latch coil fails open.	a) Associated "Emergency OWS LT. SENSOR PWR" is not available to the associated "OWS BUS". Loss of capability to turn on 3 of 6 OWS lights from the AM.	a) (1) In the event emergency lighting is required, three of the six OWS lights do not illuminate. (2) Green "OWS Power Bus status light" does not illuminate. Amber "OWS Power Bus status light" does not extinguish.	a) None	a) N/A	---
52-79703-53 1.2.503, 1.2.504		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A used for GSE ONLY - No effect.	b) None	b) Turn on lights using switch in OWS.	b) None	b) IIIB	
		a) Pole B fails open in the latch position.	a) Loss of visual indication of "Reg Bus" to associated "OWS Bus tie".	a) Green "OWS Power Bus status light" does not illuminate. Amber "OWS power bus status light" extinguishes. Both lights on during "Test".	a) None	a) N/A	---
		b) Contamination.	b) None due to Bus monitoring capability.	b) Observe Bus monitors for normal indication.	b) None	b) IIIB	
		a) Pole C fails open.	a) Associated "Emerg OWS LT. sensor PWR" is not available to the associated "OWS Bus". Loss of capability to turn on 3 of 6 OWS lights from the AM.	a) In the event emergency lighting is required 3 of the 6 OWS lights do not illuminate.	a) None	a) N/A	---
		b) Contamination.	b) None	b) Turn on lights using switch in OWS.	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching "OWS POWER #1 or #4" K1-5, -8 52-79703-53 (Either 1 of 2) 1.2.503, 1.2.504 (Continued)	M S	a) Pole D fails open. b) Contamination Pole E and F SPARE CONTACTS.	a) T/M digital display parameter indicates associated "Reg Bus" to "OWS Bus" is not complete. b) None, T/M indication of AMP Hour Meter output will provide OWS current above information.	a) None b) None	a) T/M digital display parameter indicates associated "Reg Bus" to "OWS Bus" is not complete. b) Monitor EPS system for proper operation.		

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, "OWS Power #2, #3, #5, #6, #13, #14.	M S	a) Latch coil fails open.	a) None. The remaining (5) OWS power feeders provide adequate power capability to meet OWS electrical power requirements.	a) Green "OWS Power Bus Status Light" does not illuminate. Amber "OWS Power Bus Status Light" extinguishes. Both lights on during "test".	a) None	a) N/A	---
K1-6, -7, -9, -10, -31, -32. 52-79713-15 (Any 4of 6) 1.2.506,1.2.507 1.2.508,1.2.509 1.3.510,1.2.511		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A used for GSE only - No effect.	b) None	b) Observes Bus monitors for nominal indications.	b) None	b) IIIB	
		a) Pole B fails open in latch position.	a) Loss of visual indication of "Reg Bus to associated OWS Bus" tie.	a) Green, "OWS Power Bus Status Light" does not illuminate. Amber "OWS Power Bus Status Light" extinguishes. Both lights on during "Test".	a) None	a) N/A	---
		b) Contamination.	b) None, due to Bus monitoring capability.	b) (1) Observes Bus Monitors for nominal indication. (2) Request ground indication of affected "Reg Bus to OWS Bus" tie.	b) None	b) IIIB	
		a) Pole C fails open in latch position.	a) T/M digital display parameter indicates associated "Reg Bus" to "OWS Bus" is not complete.	a) None	a) T/M digital display parameter indicates associated "Reg Bus" to "OWS Bus" is not complete.	a) N/A	---
		b) Contamination.	b) None, T/M indication of AMP Hour METER output will provide OWS current draw information.	b) None	b) Monitor EPS system for proper operation.	b) IIIB	
		a) Pole D, E, or F fails open in latch position.	a) None, the remaining (8) OWS Power feeders provide adequate power capability to meet OWS electrical power requirements.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None	b) None	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching "OWS Power #2, #3,#5,#6,#13, and #14.	M S	a) Reset coil fails open.	a) Cannot remove 3 of the 9 "OWS Power Bus" feeders from the associated "OWS Bus".	a) Green "OWS Power Bus Status Light" extinguishes, Amber "OWS Power Bus Status Light" does not illuminate.	a) None	a) N/A	---
K1-6,-7,-9,-10, -31,-32. 52-79713-15 (Any 1 of 6)		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, "OWS Bus Power" may be removed by positioning associated "OWS Power Bus feeder" circuit breakers to "Open".	b) Position affectes "OWS Power Bus feeder" circuit breakers to "Open" if necessary.	b) None	b) IIIB	
1.2.506 thru 1.2.511		a) Pole B fails open in reset position.	a) Loss of visual indication of "Reg Bus" from associated "OWS Bus" disconnect.	a) Green 'OWS Power Bus status light" extinguishes, Amber "OWS Power Bus status light" does not illuminate.	a) None	a) N/A	---
		b) Contamination.	b) None, due to Bus monitoring capability.	b) Position affected "OWS Power Bus feeder" circuit breakers to "OPEN" if necessary.	b) None	b) IIIB	
		Pole C fails open. NO EFFECT IN RESET POSITION.					
		a) Pole D, E or F fails open in reset position.	a) Associated "OWS Power Bus feeder" is not removed from the associated "OWS BUS".	a) "OWS BUS" monitors indicate power was not removed.	a) T/M indicates that associated "OWS BUS" is still powered.	a) N/A	---
			b) None due to circuit breaker backup.	b) Position affected "OWS Power Bus feeder" circuit breakers to "Open" if necessary.	b) Coordinate with crew for "Power Down" through circuit breakers.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker "OWS Bus 1 and OWS Bus 2 feeders"	M S	a) Opens before break circuit is exceeded.	a) None, the remaining (8 PER OWS BUS) Power feeders provide adequate power capability to meet "OWS" electrical power requirements.	a) None	a) None	a) N/A	---
52-79721-314 (Any 4 of 18) 1.2.512 thru 1.2.529		b) Internal defect causes coil to short to ground.	b) None	b) None	b) None	b) IIIB	
Relay, "OWS BUS on COMMAND"	S	a) Coil fails open.	a) Cannot complete associated "REG BUS" to OWS BUS tie via DCS.	a) None, CRDU function not required during maned phases.	a) T/M indicates that bus tie function was not accomplished.	a) N/A	---
52-79703-1 Kt-33, -35 (Either 1 of 2) 1.2.556,1.2.557		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to manual back-up during manned phase.	b) None	b) Request check-out during manned phase.	b) IIIB	
		a) Contact set A fails open.	a) Cannot complete associated "Reg Bus" to "OWS BUS" tie via DCS.	a) None, CRDU function not required during manned phases.	a) T/M indicates that "BUS TIE" function was not accomplished.	a) N/A	---
		b) Contamination.	b) None due to manual back-up during manned phase.	b) None	b) Request check-out during manned phase.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay "OWS BUS OFF" K1-36, -34 52-79703-1 Either 1 of 2 1.2.558,1.2.559	M S	a) Coil fails open	a) Cannot isolate the associated "Reg Bus from the associated "OWS BUS" via DCS.	a) None, CRDU function not required during manned phases.	a) T/M indicates that affected "OWS BUS is still powered.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) (1) None due to crew back-up during manned phase. (2) Circuit breakers protects associated "Reg Bus".	b) None	b) Request check-out during manned phase.	b) IIIB	
		a) Contact set A fails open.	a) Cannot isolate the associated "Reg Bus" from the associated "OWS".	a) None, CRDU function not required during manned phase.	a) T/M indicates that affected "OWS BUS" is still powered.	a) N/A	---
		b) Contamination.	b) (1) None due to crew back-up during manned phase. (2) Circuit breakers protects associated "Reg Bus".	b) None	b) Request check-out during manned phase.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic "Battery Control (6-116 thru 6-123) (Any 1 of 3) 1.2.540 thru 1.2.547	M	a) Opens before break current is exceeded.	a) None, the remaining Battery(s) on the Bus will provide sufficient power to reconfigure the EPS. In addition the same function is accomplished through the associated "Battery Switch(s)" contact set 2, 3.	a) Affected circuit breaker(s) "Bat Handle" indicates "Open".	a) None	a) N/A	---
		b) Internal defect causes coil to short to ground.	b) None	b) Position affected circuit breaker(s) to "closed" if required.	b) None	b) IIIB	
Circuit Breaker Magnetic, "Deploy Sequential Bus Arm - PRI". 1-27 52-79721-322 1.2.552	M S	a) Opens before breake current is exceeded.	a) None due to redundant circuit breaker. (DEPLOY SEQUENTIAL BUS ARM-SEC)	a) Circuit breakers "Bat Handle" indicates "OPEN".	a) None	a) N/A	---
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breaker to "CLOSED" if required.	b) None	b) IIIB	
Circuit Breaker Magnetic, "Deploy Sequential Bus Arm - Sec" 1-28 52-79721-322 1.2.553	M S	a) Opens before break current is exceeded.	a) None due to redundant circuit breaker. (DEPLOY SEQUENTIAL BUS ARM-SEC)	a) Circuit Breakers "Bat Handle" indicates "OPEN".	a) None	a) N/A	---
		b) Internal defect causes coil to short to ground.	b) None	b) Position circuit breaker to "Closed" if required.	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, "OWS Bus 1 and 2 Feeders-Contial-AM. 1-6, 1-7	M S	a) Opens before break current is exceeded.	a) (1) Cannot connect associated "Reg Bus" to associated "OWS Power Bus". (2) Associated "OWS Emerg LTS Sensor PWR" is not available.	a) Associated green "OWS Power Bus status light" does not illuminate, Amber "OWS Power Bus status light" does not illuminate. In addition, in the event emergency lighting is required, 3 of the 6 OWS lights do not illuminate.	a) T/M indicates that associated "OWS BUS" is not powered.	a) N/A	---
52-79721-322 (Either 1 of 2) 1.2.554,1.2.555		b) Internal defect causes coil to short to ground.	b) None, assuming that "OWS Buses" provide redundant capability.	b) (1) Position circuit breaker to closed if required. (2) Rig portable light if required.	b) Coordinate with crew for possible reduction of "OWS activities.	b) IIIB	
Circuit Breaker Magnetic, "OWS Bus 1 and Bus 2 feeders-control-OWS" 1-33,34 52-79721-322 Either 1 of 2 1.2.644, 1.2.645	M	a) Opens before break current is exceeded. b) Internal defect causes coil to short to ground.	a) Cannot remove (connect) associated "Reg Bus" from "to" associated "OWS Bus". b) None due to redundant switch (OWS Bus Switch) in AM.	a) Associated "OWS Bus status light does not change state. b) Position "OWS Bus Switch" to desired position.	a) T/M indicates that associated "OWS Bus" is not powered. (Or has power removed). b) During storage phase of mission activate desired DCS channel.	a) N/A b) IIIB	---

*COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle "Utility Power" 52-79705-5,-125 (Any 1 of 6) 1.2.568 thru 1.2.573	M	a) Contact set 2,3 fails open.	a) None due to additional "Utility power" capability provided by redundant utility power connections.	a) Intended function does not operate.	a) None	a) N/A	—
		b) Contamination.	b) None	b) Utilize redundant utility power connectors.	b) None	b) IIIB	
Circuit Breaker Magnetic, "Utility Power AM". 1-1, -4 (Either 1 of 2) 52-79721-320 1.2.575,1.2.576	M	a) Opens before break current is exceeded.	a) None due to redundancy provided by opposite circuit breaker.	a) Intended function does not operate.	a) None	a) N/A	—
		b) Internal defect causes coil to short to ground.	b) None	b) Utilize redundant utility power connection.	b) None	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, :Utility Power MDA".	M	a) Opens before break current is exceeded.	a) None due to redundancy provided by opposite circuit breaker.	a) Intended MDA function does not operate.	a) None	a) N/A	---
1-5, 1-16 (Either 1 of 2) 52-79721-320 1.2.576,1.2.577		b) Internal defect causes coil to short to ground.	b) None	b) Utilize redundant utility power connectors.	b) None	b) IIIB	
Circuit Breaker Magnetic, "ARRAY DEPLOY-2" 6-145	S	a) Opens before break current is exceeded.	a) None due to redundancy provided by DCS.	a) None	a) T/M indicates that the IU located in OWS did not provide "ARRAY DEPLOY" signals.	a) N/A	---
52-79721-320 1.2.560		b) Internal defect causes coil to short to ground.	b) None	b) None	b) Provide signals via DCS.		
Circuit Breaker Magnetic, "ARRAY DEPLOY-1" 6-144	S	a) Opens before break current is exceeded.	a) Loss of redundant capability for "ARRAY DEPLOYMENT".	a) None	a) In the event it becomes necessary to utilize DCS for array deployment failure of the circuit breaker would result in T/M indication of non-deployment of the solar arrays.	a) N/A	---
52-79721-320 1.2.561		b) Opens before break current is exceeded.	b) None, function required only in the event of prior failure.	b) None	b) Attempt to deploy arrays by I.U. Recycle.	b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, "ARRAY DEPLOY WING CHARGE" 52-79703-45 K6-263 1.2.562	S	a) Latch coil fails open. b) Defective terminal or wire subjected to mechanical or thermal stress. or Pole D fails open due to contamination. Pole A - used for GSE only. Pole B and C - spare poles.	a) Loss of redundant "ARRAY DEPLOYMENT" capability. (WING) b) None, function required only in the event of prior failure.	a) None b) None,	a) T/M indicates that arrays were not deployed. b) Attempt to deploy arrays by IU recycle.	a) N/A b) IIIB	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, S.R. "ARRAY DEPLOY WING FIRE". 52-79703-1 K6-264 1.2.646	S	a) Coil fails open.	a) Loss of redundant "ARRAY DEPLOYMENT" capability. (WING)	a) None	a) T/M indicates that arrays (WINGS) were not deployed.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress or Pole B fails open due to contamination. Pole A-spare pole.	b) None, function required only in the event of prior failure.	b) None	b) Attempt to deploy arrays by IU recycle.	b) IIIB	
Relay, Latching, "ARRAY DEPLOY FAIRING CHARGE" 52-79703-45 K6-261 1.2.563	S	a) Latch coil fails open.	a) Loss of redundant "ARRAY DEPLOYMENT" capability. (FAIRING)	a) None	a) T/M indicates that array fairings were not deployed.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. or Pole D fails open due to contamination. Pole A - used for GSE only. Pole B and C-spare poles.	b) None, function required only in the event of prior failure.	b) None	b) Attempt to deploy fairings by IU recycle.	b) IIIB	

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SYSTEM: ELEC. POWER
SUBSYSTEM: POWER MANAGEMENT AND DISTRIBUTION

MCDONNELL
ST. LOUIS, MISSOURI

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MODEL 1903

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, S.R. "ARRAY DEPLOY FAIRING FIRE" 52-79703-1 K6-262 1.2.647	S	a) Coil fails open. b) Defective terminal or wire subjected to mechanical or thermal stress.	a) Loss of redundant "ARRAY DEPLOY FAIRING FIRE" capability. b) None, function required only in the event of prior failure.	a) None b) None	a) T/M indicates that "array fairings were not deployed. b) Attempt to deploy "array fairings by IU recycle.	a) N/A b) IIIB	---

ANALYSIS OF SECOND FAILURES

ELECTRICAL POWER SYSTEM

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, "Bus ATM Transfer Tie". 52-79705-35 (Either 1 of 2)	M	a) Contact set 2,1 fails open	a) None - Due to redundancy provided by contact set 5,4 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
		a) Contact set 5,4 fails open.	a) None - Due to redundancy provided by contact set 2,1 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	- - -
		b) Contamination	b) None	b) None	b) None	b) III b	
				SECOND FAILURE			
	M	a) Contact set 2,1 and 5,4 fail open (open position)	a) Cannot open tie between associated "Transfer Bus" and "AM/ATM" Bus.	a) Associated "Bus Amps Transfer to ATM Ammeter" indicates other than zero. Amber "Bus ATM transfer tie open status light" does not illuminate. Green "Bus ATM Transfer tie closed status light" does not extinguish.	a) T/M indicates that power "Open" function was not accomplished.	a) N/A	- - -
		b) Contamination	b) None - DCS backs up switch function.	b) 1. Verify that "Power System Control Switch" is in "Manual" and request ground to perform function via DCS 2. Position associated ATM/ Transfer Circuit breakers to "Open".	b) Activate associated DCS channel at crew request.	b) III b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch "Bus ATM Transfer Tie" 52-790S-35 (Either 1 of 2)	M	a) Contact set 2,3 fails open. (CLOSED POSITION)	a) None due to redundancy provided by contact set 5,6 of the same switch. In addition, DCS backs up switch function.	a) None	a) None	a) N/A	
Continued		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 5,6 fails open. (CLOSED POSITION)	a) None due to redundancy provided by contact set 2,3 of the same switch. In addition, DCS backs up switch function.	a) None	a) None	a) N/A	
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
	M	a) Contact set 2,1 and 5,4 fail open (CLOSED POSITION)	a) In the event that the switch has been positioned to "Open" an attempt to position the switch back to "Closed" would result in the inability to tie the associated transfer bus to the associated AM/ATM bus.	a) Associated "BUS AMPS TRANSFER TO ATM AMMETER" continues to indicate zero. Amber "BUS ATM TRANSFER TIE OPEN STATUS LIGHT" does not extinguish. Green "BUS ATM TRANSFER TIE CLOSED STATUS LIGHT" does not illuminate.	a) T/M indicates, that power "Closed" function was not accomplished.	a) N/A	
			b) None, DCS backs up switch function.	b) Verify that "POWER SYSTEM CONTROL SWITCH" is in "MANUAL" and request ground to perform function via DCS.	b) Actuate associated DCS Channel at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, "Bus ATM Power Disconnect Control". K6-285, 286 52-79703-1 (Either 1 of 2)	M	a) Coil fails open.	a) None due to active redundancy provided by opposite relay.	FIRST FAILURE a) None	a) None	a) N/A	
		b) Defective Terminal or wire subjected to mechanical or thermal shock.	b) None	b) None	b) None	b) IIIb	
		a) Both coils fail open.	a) In the event it is necessary to disconnect the "TRANSFER BUS" from the "AM/ATM" bus utilizing the "ATM PWR DIS SWITCH" and both relays fail, power is not removed from the "ATM Busses".	SECOND FAILURE a) Associated instrumentation indicates that disconnect was not accomplished.	a) T/M indicates that power disconnect function was not performed.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal shock.	b) None, 1. "Bus ATM Transfer Tie Switch" in AM provides back up. 2. DCS Packs up AM switch. 3. "ATM/TRANSFER FEEDER" circuit breakers may be positioned to "Open", to provide disconnect	b)1. Position "AM" "BUS ATM TRNASFER TIE SWITCH" to "OPEN". 2. Request ground to perform function via DCS. 3. Position "ATM/TRANSFER FEEDER" circuit breakers to open.	b) Activate associated DCS Channel at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, Momentary "Power DISC".	M	a) Contact set 2, 1 fails open.	a) None due to redundancy provided by contact set 5, 4 of the same switch.	a) None	a) None	a) N/A	------
52-79705-65		b) Contamination	b) None	b) None	b) None	b) IIIb	
(Either 1 of 2)		a) Contact set 5, 4 fails open.	a) None due to redundancy provided by contact set 2,1 of the same switch.	a) None	a) None	a) N/A	------
1.2.357 1.2.358		b)	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Both contact sets 2, 1 and 5, 4 fails open.	a) 1. Power is not removed from the associated "Transfer Bus". 2. Associated regulator outputs are not removed from the associated bus.	a) 1. Associated "Transfer Bus voltmeter" indicates other than zero. 2. Green "Bus Reg transfer tie open status light" does not extinguish. Amber "Bus reg transfer tie open light" does not illuminate. 3. Equipment powered by Reg Busses continue to function.	a) T/M indication that the "tie open" function was not accomplished.	a) N/A	------
		b) Contamination	b) 1. None due to redundancy provided by associated "Bus Reg Transfer Tie Switch". 2. Regulator outputs may be removed by individual "Power Conditioning Group Output Switches."	b) 1. Position associated "Bus Reg Transfer Tie Switch to "OPEN". 2. Position "Power Conditioning Group Output Switches" to "OFF" 3. Position "PWR SYS CNTL Switch" to "CMD" and request ground to perform function via DCS.	b) Activate associated DCS channels at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, Momentary, "Battery" 1 thru 8 52-79705-113 (Any 1 of 8)	M	a) Contact set 5,6 fails open. (ON POSITION)	a) None, primary function is accomplished through redundant contact set 2, 3 of the same switch.	a) If the affected PCG charges was bypassed the amber "charger bypass" light will not extinguish.	a) T/M indicates that PCG charges does not change from "Bypass" to "Normal".	a) N/A	------
		b) Contamination	b) None - used only to repower EPS after complete shutdown due to system failure. In addition, DCS backs up switch function.	b) Position "Charger Switch" to "Normal".	b) None	b) IIIb	
		a) Contact set 2,3 fails open. (ON POSITION).	a) None, function is accomplished through active redundant contact set 5, 6 of the same switch.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 5,7 and 2,3 fails open. (ON POSITION)	a) Cannot connect associated battery to associated battery charger.	a) Green "Battery on status light" does not illuminate. Amber "Battery off status light" does not extingush.	a) T/M indicates that battery connection was not accomplished.	a) N/A	------
		b) Contamination.	b) None, due to redundancy provided by DCS.	b) Request ground to perform function VIA DCS.	b) Perform function at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch Momentary "Battery"	M	a) Contact set 5,4 fails open. (OFF POSITION).	a) None, due to active redundant contact set 2, 1 of the same switch.	a) None	a) None	a) N/A	------
1 through 8		b) Contamination	b) None, DCS backs up switch function.	b) None	b) None	b) IIIb	
52-79705-113 (Any 1 of 8)		a) Contact set 2,1 fails open. (OFF POSITION).	a) None, function is accomplished through active redundant contact set 5,4 of the same switch. (Assuming associated battery contains enough power for relay transfer).	a) None	a) None	a) N/A	-------
		b) Contamination.	b) None, DCS backs up switch function.	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 5,4 and 2, 1 fails open. (OFF POSITION)	a) Cannot disconnect associated battery from the associated battery charger.	a) Green "Battery on status light" does not extinguish, amber "Battery off status light" does not illuminate.	a) T/M indicates that battery disconnect function was not accomplished.	a) N/A	------
		b) Contamination	b) None due to redundancy provided by DCS.	b) Request ground to perform function via DCS.	b) Perform function at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch "Bus 1 Power System Light"	M	a) Contact set 2,1 fail open in "test" position.	a) None, due to active redundant contact set 5,4.	a) None,	a) None	a) N/A	------
52-79705-139		b) Contamination	b) None	b(None	b) None	b) IIIb	
		a) Contact set 5, 4 fails open in "Test" position.	a) None, due to active redundant contact set 2,1.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 2, 1 and 5, 4 fails open in "Test" position.	a) Loss of Status light test capability for PCG's 1,2,3, and 4, Bus 1 ATM transfer tie, AM Bus I power reg Bus 1, and single point ground circuits.	a) When the "Bus 1 Power System Light Switch" is positioned to the "Test" position associated status lights do not illuminate.	a) None	a) N/A	------
		b) Contamination	b) None due to redundancy provided by "Status" position of the switch.	b) Position "Bus 1 Power System Lights Switch" to "Status", and observe lights that are illuminated. If further verification is required, request ground to perform T/M parameter survey.	b) Perform T/M survey at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch "Bus 1 Power System Light"	M	a) Contact set 2,3 fails open in "Status" position.	a) None due to active redundant contact set 5, 6.	a) None	a) None	a) N/A	------
52-79705-139		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 5,6 fails open in "Status" position.	a) None due to active redundant contact set 2,3.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) None	
				SECOND FAILURE			
		a) Contact set 2, 3 and 5,6 fails open in "Status" position.	a) Loss of status light check capability of PCG's 1,2,3, and 4, Bus 1 ATM transfer tie, AM Bus 1 Power Reg Bus 1 and, single point ground circuits.	a) When the "Bus 1 power system light switch" is positioned to the "Status" position the associated status lights do not illuminate.	a) None	a) N/A	------
		b) Contamination	b) None due to redundancy provided by ON-BOARD monitors and T/M backup.	b) Request ground to provide power connective status.	b) Provide requested information	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch "Bus 2 Power System Lights"	M	a) Contact set 2, 1 fails open in "Test" position.	a) None due to active redundant contact set 5,4.	a) None	a) None	a) N/A	------
52-79705-139		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 5,4 fails open in "Test"position.	a) None due to active redundant contact set 2, 1.	a) None	a) None	a) N/A	-----
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 2, 1 and 5,4 fails open in "Test" position.	a) Loss of Status light test capability for PCG's 5,6,7 and 8, Bus 2 ATM transfer tie, AM Bus 2 Power Reg. Bus 2.	a) None	a) None	a) N/A	------
		b) Contamination	b) None due to redundancy provided by "Status" position of the switch.	b) Position "Bus 2 Power System Lights Switch" to "Status", and observe lights that are illuminated. If further verification is required, request ground to perform T/M parameter survey.	b) Perform the survey at crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, "Bus 2 Power System Lights"	M	a) Contact set 2,3 fails open. "Status" position.	a) None, due to active redundant contact set 5,6.	a) None	a) None	a) N/A	------
52-79705-139		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 5,6 fails open. "Status" Position.	a) None, due to active redundant contact set 2,3.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 2,3 and 5,6 fails open. "Status" position.	a) Loss of status light check capability of PCG's 5,6,7, and 8, Bus 2 ATM transfer tie, AM Bus 2 Power Reg Bus 2.	a) When the "Bus 2 power system lights Switch" is positioned to the "Status" position the associated status lights do not illuminate.	a) None	a) N/A	------
		b) Contamination	b) None due to redundancy provided by ON Board monitors and T/M backup.	b) Request ground to provide power connection status.	b) Provide requested information.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, Momentary "Bus Reg/Transfer Tie" 52-79705-113 (This "Reg Bus" to "Transfer Bus" (Either 1 of 2)	M	a) Contact set 2,3 fails open. (Closed Position).	a) None due to redundancy provided by contact set 5,6 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 5,6 fails open. ("CLOSED" position)	a) None due to redundancy provided by contact set 2,3 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 2,3 and 5,6 fails open. (Closed position).	a) Associated "Reg Bus" cannot be tied to associated "Transfer Bus".	a) "Bus Reg/Transfer tie closed status light" does not illuminate green. "Amber Bus Reg/Transfer the open status Light" does not extinguish.	a) T/M indicates that power transfer was not assomplished.	a) N/A	
		b) Contamination	b) Possible reduction of ATM and CSM activities due to reduction of available power.	b) Position "Power System Control Switch" to "CMD" and request ground to attempt transfer via DCS.	b) Activate associated DCS channel at crew request.	b) IIIb	------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, Momentary "Bus Reg/Transfer Tie" 52-79705-113 (Ties "Reg Bus" to "Transfer Bus" (Either 1 of 2)	M	a) Contact set 2, 1 fails open. ("OPEN" Position)	a) None due to redundancy provided by contact set 5,4 of the same switch. In addition DCS backsup switch function.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 5,4	a) None due to redundancy provided by contact set 2, 1 of the same switch. In addition DCS backs up switch function.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 2,1 and 5,4 fails open. ("OPEN" position).	a) Cannot remove Reg Bus power from the associated transfer bus.	a) Green "Bus Reg/Transfer Tie closed status light" does not extinguish. Amber "Bus Reg/ Transfer Tie open status light" does not illuminate.	a) T/M indicates that power "OPEN" function was not accomplished.	a) N/A	------
		b) Contamination	b) None, In the event it is necessary to remove power from a transfer Bus, Regulator outputs may be removed by individual "PCG Output Switches. In addition DCS backsup switch function.	b) 1. Position "PWR SYS CNTRL SWITCH" to "CMD" and request ground to attempt transfer via DCS. 2. Remove associated PCG outputs from affected "REG Bus" if required.	b) Activate associated DCS channel at crew request.	b) IIIb	

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SUBSYSTEM: POWER DISTRIBUTION AND MANAGEMENT

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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Relay Latching, "EREP BUS POWER" 52-79713-13 K6-269,K6-272 (Either 1 of 2)	M	a) Pole A fails open. ("ON" position) of EREP bus power control switch).	a) None due to redundancy provided by pole b of the same relay.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIB	
		a) Pole B fails open. (ON position of EREP bus power control switch).	a) None due to redundancy provided by Pole A of the same relay.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Pole A and Pole B fails open. (ON position of EREP Bus Power Control Switch).	a) Associated EREP Bus is not connected to associated AMBUS.	a) Experiments powered by associated EREP Bus do not operate.	a) T/M indicates that associated EREP Bus is not powered.	a) N/A	------
		b) Contamination	b) Cannot perform experiments powered by associated bus.	b) None	b) Maintain system surveillance.	b) IIIb	

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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch Toggle, "Deploy Bus ARM Switch" 52-79705-75	L M	a) Contract set 2,3 fails open ("ARM" position of "Deploy Bus ARM switch")	a) None due to rdundancy provided by contact set 11, 12 of the same switch.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 11, 12 fails open. "(ARM" position of "deploy bus arm switch").	a) None due to redundancy provided by contact set 2, 3 of the same switch.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 2,3 and 11, 12 fails open. ("ARM" position of "Deploy Bus arm switch").	a) Cannot manually arm the deploy busses.	a) Associated deploy functions do not operate.	a) T/M indicates that deploy busses were not armed.	a) N/A	------
		b) Contamination	b) None. Function is required on only in the event of multiple failures.	b) None	b) Maintain system surveillance.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Relay, Slow Releases" Seq-Uential Bus ARM". 52-79713-13 K1-37, K1-38 Either 1 of 2	L	a) Coil fails open ("CMD" Position of sequential Bus Arm Switch).	a) None due to active redundancy provided by opposite relay.	a) None	a) None	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Both relay coils fail open.	a) None due to redundancy provided by DCS.	a) None	a) T/M indicates that the sequential busses are not armed.	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) Activate associated DCS channel.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Relay, latching "Sequential Bus Arm".	L	a) Latch coil fails open.	a) None due to active redundancy provided by opposite relay.	a) None	a) None	a) N/A	------
K1-39, - 40 52-79713-15 (Either 1 of 2)		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Both relay coils fails open.	a) None due to redundancy provided by DCS.	a) None	a) T/M indicates that the sequential busses are not armed.	a) N/A	------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None	b) None	b) Activate associated DCS Channel.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
				FIRST FAILURE			
Switch, Toggle "Sequential Bus Arm"	L	a) Contact Set 5,6 fails open. (CMD Position).	a) None due to active redundant contact set 8,9 of the same switch.	a) None	a) None	a) N/A	------
52-79705-57		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Contact set 8,9 fails open. (CMD Position).	a) None due to active redundant contact set 8,9 of the same switch.	a) None	a) None	a) N/A	------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
				SECOND FAILURE			
		a) Contact set 5,6 and contact set 8,9 fails open. (CMD Position).	a) "Sequential busses do not receive arming signal."	a) None	a) T/M indicates that the "sequential busses" were not armed.	a) N/A	------
		b) Contamination	b) "Sequential Bus" functions do not operate.	b) None	b) Attempt IU Recycle.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares) (The Speaker Intercom provides individual crewman communication with ground and other crewmen, capability to record voice data, and provide caution and warning tones) 2.1.01	M	a) Loss of Microphone output.	a) Loss of crew voice communication from affected unit.	a) Crew receives no reply to voice transmissions over affected station.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Thermal stress or mechanical stress.	b) None, due to replaceable Speaker/Intercom Units.	b) Replace defective Speaker/Intercom Unit with functional unit.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	
		a) Contact Set (2,1) of "Push to talk" switch S4, fails open.	a) Crewman cannot key CSM RF Transmitter from affected unit.	a) Ground does not respond to voice communication from affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to replaceable Speaker/Intercom Units.	b) Replace defective Speaker/Intercom unit with a functional unit.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	
		a) Loss Contact set (5,4) of "Push to talk" switch S4, fails open.	a) Crewmen cannot transmit voice communication over Hardline to other crewmen and ground from affected unit.	a) Crewmen in various parts of the cluster and ground do not respond to voice communication from affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to replaceable Speaker/Intercom Units.	b) Replace defective Speaker/Intercom Unit with a functional unit.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	
		a) Contact Set (5,6) of switch S4, "Push to talk" fails open.	a) Crewmen cannot transmit voice communication over Hardline to other crewmen from affected unit.	a) Crewmen in various parts of the cluster do not respond to voice communication from affected unit.	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to replaceable Speaker/Intercom Units.	b) Replace defective Speaker/Intercom Unit with a functional unit.	b) None	b) III-b	
		a) Loss of Speaker output.	a) Loss of audio communication from unaffected stations and loss of Caution and Warning Tone.	a) Crewmen cannot receive audio communication or Caution and Warning Tone over affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Thermal stress or mechanical stress.	b) None, due to replaceable Speaker/Intercom units.	b) Replace defective Speaker/Intercom unit with a functional unit.	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate.	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Speaker Gain Potentiometer Wiper fails to make contact. (Volume Control)	a) Loss of all audio communication except for Caution and Warning Tone and during "Call" mode operation.	a) Crewmen cannot receive audio communication except over call mode on affected unit.	a) No reply when transmitting to affected crewmen, unless using the "Call" mode.	a) N.A.	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to replaceable Speaker/Intercom units.	b) Replace defective Speaker/ Intercom Unit with a functional unit.	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate, or switch to the "Call" mode.	b) III-b	
		a) Contact "10" fails open with contacts 11, 12, 13, or 14 of switch S2, Channel Select.	a) Loss of the Speaker/Intercom.	a) Loss of all functions of the affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to replaceable Speaker/Intercom Units.	b) Replace defective Speaker/ Intercom Unit with a functional unit.	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate.	b) III-b	
		a) Contact set (20,21) of Switch S2, Channel Select, fails open.	a) "Call Signal" will not activate the affected Speaker/Intercom when S2 is in "A/sleep" position.	a) None, unless Call Switch S1 is activated. Crewmen will receive no answer to their "Call" to other crewmen or to ground.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and to replaceable Speaker/Intercom Units.	b) Switch S2 to "A/ON" position.	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate.	b) III-b	
		a) Contact Set (20, 22) of Switch S2, Channel Select, fails open.	a) Loss of audio, and voice communication on Channel A from the affected unit when switch S2 is in the "A/ON" position.	a) Loss of audio, and voice communication on Channel A of affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units.	b) Switch to Channel B.	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate.	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (2023) of Switch S2, Channel Select, fails open.	a) Loss of audio, and voice communication on Channel B from the affected unit when switch S2 is in the "B/ON" position.	a) Loss of audio, and voice communication on Channel B of affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units.	b) Switch to Channel A.	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate.	b) III-b	
		a) Contact set (2024) of Switch S2, Channel Select, fails open.	a) "Call" will not activate the affected Speaker/Intercom when S2 is in the "B/Sleep" position.	a) None, unless Call Switch of the affected unit, S1, is activated. Crewmen will receive no answer to their "Call" signal to other crewmen or to ground.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units.	b) Switch S2 to "B/ON".	b) Inform unaffected crewmen to alert affected crewmen that ground is trying to communicate.	b) III-b	
		a) Contact Set (30,31) of Switch S2, Channel Select, fails open.	a) None, due to redundant contacts, if S2 is switched slowly.	a) None	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) III-b	
		a) Contact Set (30,32) of Switch S2, Channel Select, fails open.	a) Speaker/Intercom fails to switch channels when S2 is switched from "B/ON" to "A/ON".	a) When S2 is switched from "B/ON" to "A/ON" Speaker Intercom does not switch from Channel B to Channel A.	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant switching circuits.	b) Switch S2 to "A/Sleep" and then to "A/ON".	b) None	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (30,34) of switch S2, Channel Select, fails open.	a) None, due to redundant contacts, if S2 is switched slowly.	a) None	a) None	a) N.A.	---
		b) Insulating film or contacts due to contamination.	b) None	b) None	b) None	b) III-b	
		a) Contact Set (30,33) of switch S2, Channel Select, fails open.	a) None, due to redundant contacts.	a) When S2 is switched from "A/ON" to "B/ON" Speaker Intercom does not switch from Channel A to Channel B.	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant switching circuits.	b) Switch S2 to "B/Sleep" and then to "B/ON".	b) None	b) III-b	
		a) Contact Set (40,41) of Switch S2, Channel Select, fails open.	a) "Call" signal will not bypass the volume control when S2 is in the "A/Sleep" position.	a) No reply to the "Call" signal, from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) No reply to the "Call" signal, from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units.	b) Inform affected crewmen of the "Call" signal.	b) Inform unaffected crewmen to inform affected crewmen of the "Call" signal.	b) III-b	
		a) Contact Set (40 42) of Switch S2, Channel Select, fails open.	a) "Call" signal will not bypass the volume control when S2 is in the "A/ON" position.	a) No reply to the "Call" signal from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) No reply to the "Call" signal, from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units.	b) Inform affected crewmen of the "Call" signal.	b) Inform unaffected crewmen to inform affected crewmen of the "Call" signal.	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (40, 43) of Switch S2, Channel Select, fails open.	a) "Call" signal will not bypass the volume control when S2 is in the "B/ON" position.	a) No reply to the "Call" signal from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) No reply to the "Call" signal, from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) N.A.	---
		b) Insulating film of contacts due to contamination	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units	b) Inform affected crewmen of the "Call" signal.	b) Inform unaffected crewmen to inform affected crewman of the "Call" signal.	b) III-b	
		a) Contact Set (40 44) of Switch S2, Channel Select, fails open.	a) "Call" signal will not bypass the volume control when S2 is in the "B/Sleep" position.	a) No reply to the "Call" signal, from the affected crewmen unless the volume control setting provides sufficient volume to alert the crewmen.	a) No reply to the "Call" signal from the affected crewmen unless volume control setting provides sufficient volume to alert crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels and due to replaceable Speaker/Intercom Units.	b) Inform affected crewmen of the "Call" signal.	b) Inform unaffected crewmen to inform affected crewmen of the "Call" signal	b) III-b	
		a) Contact Set (50, 52) of switch S2, Channel Select, fails open.	a) Loss of Caution and Warning Tones from the High Level Audio Amplifier while using Channel A.	a) Approximately a 3 dB drop in Caution and Warning Tones	a) None	a) N.A.	
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Caution and Warning Tones, from the Caution & Warning Unit.	b) None	b) None	b) III-b	
		a) Contact Set (50, 53) of Switch S2, Channel Select, fails open.	a) Loss of Caution and Warning Tones from the High Level Audio amplifier while using Channel B.	a) Approximately a 3 dB drop in Caution and Warning Tones	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Caution and Warning Tones, from the Caution and Warning Unit.	b) None	b) None	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A050003 (Any 1 of 13 2 Flight Spares)	M	a) Contact Set (60, 62) of Switch S2, Channel Select, fails Open.	a) Tape Record Light on affected unit does not light when tape recorder is on and S2 is in the "A/On" position.	a) When S3, Tape Record Switch, is activated, record light does not light.	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination	b) None, due to redundant methods of determining if tape recorder is on.	b) Check other active Speaker/Intercoms to see if light is on.	b) None	b) III-b	
		a) Contact Set (60, 63) of Switch S2, Channel Select, fails open.	a) Tape Record Light on affected unit does not light when tape recorder is on and S2 is in the "B/On" position.	a) When S3, Tape Record Switch, is activated, record light does not light.	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination	b) None, due to redundant methods of determining if tape recorder is on.	b) Check other active Speaker/Intercoms to check status of light.	b) None	b) III-b	
		a) Contact Set (70, 71) or (80, 81) of Switch S2, Channel Select, fails open.	a) Loss of Channel A voice communication in the "Call" mode when S2 is in the "A/Sleep" position.	a) Crew receives no reply to voice communication over affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination	b) None, due to redundant methods of transmitting voice communication.	b) Switch S2 to "A/ON" position.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)		a) Contact Set (70, 72) or (80,82) of Switch S2, Channel Select, fails open.	a) Loss of voice communication on Channel A when S2 is in "A/ON" position.	a) Crew receives no reply to voice communication over Channel A when S2 is in the "A/ON" position.	a) No reply when transmitting to affected crewmen.	a) N.A.	-----
		b) Insulating film on contacts due to contamination.	b) None, due to replaceable Speaker/Intercom units.	b) Switch to Channel B or replace the Speaker/Intercom.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	
		a) Contact Set (70, 73) or (80,83) Switch S2, Channel Select, fails open.	a) Loss of voice communication on Channel B when S2 is in the "B/ON" position.	a) Crew receives no reply to voice communication over Channel B when S2 is in the "B/ON" position.	a) No reply when transmitting to affected crewmen.	a) N.A.	-----
		b) Insulating film on contacts due to contamination.	b) None, due to replaceable Speaker/Intercom units.	b) Switch to Channel A, or replace the Speaker/Intercom.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	
		a) Contact Set (70, 74) or (80,84) of Switch S2, Channel Select, fails open.	a) Loss of Channel B voice communication in the "Call" mode when S2 is in the "B/Sleep" position.	a) Crew receives no reply to voice communication over affected unit.	a) No reply when transmitting to affected crewmen.	a) N.A.	-----
		b) Insulating film on contacts due to contamination.	b) None, due to redundant methods of transmitting voice communication.	b) Switch S2 to "B/ON" position.	b) Inform affected crewmen that voice communication is not being received.	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (2, 1) of Switch S3, Tape Recorder Switch, fails open.	a) Loss of capability to turn on the audio tape recorder from affected Speaker Intercom via Bus 1.	a) None	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set 5,4).	b) None	b) None	b) III-b	
		a) Contact Set (2, 3) of Switch S3, Tape Record Switch, fails open.	a) Unable to turn off audio tape recorder from affected Speaker/Intercom.	a) When the tape record switch is placed in the "Inhibit" position, the Record Light will remain on.	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, tape recorder can be turned off at any of the other Speaker/Intercoms.	b) Inform crewmen at other Speaker/Intercoms to turn off the tape recorder.	b) None	b) III-b	
		a) Contact set (5, 4) of Switch S3 Tape Recorder Switch, fails open	a) Loss of capability to turn on the audio tape recorder from affected Speaker Intercom via Bus 2.	a) None	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (2, 1).	b) None	b) None	b) III-b	
		a) Contact set (5,6) of Switch S3, Tape Recorder Switch fails open.	a) Loss of capability to reset Voice Record Relay #1 from affected Speaker Intercom	a) None	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, having the Audio Load Compensator connected to the tape recorder has no effect.	b) None	b) None	b) III-b	
		a) Contact Set (2, 1) of Switch S1, Call Switch, fails open.	a) Loss of capability to generate a "Call" signal via Bus 1 from affected Speaker Intercom.	a) None	a) None	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (5, 4).	b) None	b) None	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (5, 4) of Switch S1, Call Switch, fails open.	a) Loss of capability to generate a "Call" signal via Bus 2 from affected Speaker Intercom	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination	b) None, due to redundancy by contact set (2,1).	b) None	b) None	b) III-b	
		a) Contact sets (8, 7) of Switch S1, Call Switch, fails open.	a) Voice transmission cannot be made over affected unit by activating the Call Switch.	a) Crew receives no reply over the "Call" Signal from the affected unit.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant methods of obtaining voice transmission over affected unit.	b) Use switch S4 to transmit the "Call" Signal.	b) None	b) III-b	
		a) Contact Set (10, 11) of Switches S5 or S6, Crewmen Mode Switch, fails open.	a) "Call" Signal will not override Headset "Sleep" mode	a) Affected crewmen will not respond to the "Call" Signal.	a) Affected crewmen does not respond to ground "Call" signal.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant Headset channels through the Speaker/Intercom.	b) Alert affected crewman of attempt to communicate.	b) Inform unaffected crewmen to inform affected crewmen that ground is trying to communicate.	b) III-b	
		a) Contact set (20, 21), (20, 23), or (20, 24) [(30, 31), (30, 33), or (30, 34)]	a) Loss of one-half of the redundant circuitry providing Caution and Warning Tones.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redendancy provided by contact sets (30, 31), (30, 33), or (30, 34) [(20, 21), (20, 23), or (20, 24)]	b) None	b) None	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (40, 41), (40, 43), (40, 44), (50, 51)), (50, 53), or (50, 54) of Switches S5 or S6, Crewman Mode, fails open.	a) Loss of earphone signal to Headset from affected channel.	a) Crewman receives no audio communication from affected channel.	a) No reply when transmitting to affected crewman.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant Headset channels through the Speaker/Intercoms.	b) Switch to redundant channel.	b) Inform unaffected crewmen to alert affected crewman that ground is trying to communicate.	b) III-b	
		a) Contact Set (70, 71), (70, 73), or (70, 74) of Switches S5 or S6, Crewman Mode, fails open.	a) Loss of Bio Med functions from affected crewman.	a) None	a) Loss of telemetry Bio Med date from affected crewman.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redendant Headset channels through the Speaker/Intercom.	b) None	b) Inform affected crewman of loss of Bio Med functions.	b) III-b	
		a) Contact Set (80, 83) of Switches S5 or S6, Crewman Mode, fails open.	a) Loss of Microphone power to Headset of affected channel.	a) Affected crewman receives no reply to voice transmission over affected channel.	a) No reply when transmitting to affected crewman.	a) N.A.	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant Head set channels through the Speaker/Intercom.	b) Switch to redundant channel.	b) Inform affected crewman that voice communication is not being received.	b) III-b	

DATE 10 July 1970
REVISED 31 August 1971
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SYSTEM: Communication
SUBSYSTEM: Voice Communication

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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact Set (80, 83) of Switch S5 or S6, Crewman Mode, fails open.	a) Crewmen from affected Headset cannot key CSM RF Transmitter.	a) Ground does not respond to voice communication over affected channel.	a) No reply when transmitting to affected crewmen.	a) N.A.	---
		b) Insulating film on contacts due to contamination	b) None, due to redundant Headset channels through the Speaker-Intercom.	b) Switch to redundant channel.	b) Inform affected crewman that voice communication is not being received.	b) III-b	
		a) Record Light DS1 fails to light.	a) No indication from affected unit if tape recorder is on.	a) Record Light on affected Speaker/Intercom will not light when recorder is turned on.	a) None.	a) N.A.	---
		b) Mechanical shock or thermal stress.	b) None, due to redundancy. provide by record lists on other speaker intercoms.	b) Check other active Speaker Intercoms to see if their Record Light is on.	b) None.	b) III-b	
	M	a) Master Alarm Status Light DS2 (DS3)	a) Loss of Master Alarm Light from one Caution and Warning Subunit.	a) During inflight testing of C&W System, C&W Subunit #1 (2) does not light the Master Alarm Status Light.	a) None	a) N/A	---
		b) Open filament due to mechanical or thermal stress.	b) None, due to redundant Master Alarm Status Light DS3 (DS2).	b) None	b) None	b) III-b	---

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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Audio Load Compensator 61A050004 (1 of 2) 2.1.02A 2.102B (The Audio Load Compensator provides constant impedance and automatic gain control to the CSM Audio System independent of the number of Speaker/Intercoms and Headsets being used in the cluster.)	M	a) Loss of Headset output, Channel A or B.	a) Loss of Audio communication over one channel.	a) Loss of audio communication over one channel.	a) Loss of audio communication over one channel.	a) N.A.	---
		b) Open.	b) None, due to redundant Channels.	b) Switch to redundant Channel.	b) Use Redundant channel for communication.	b) III-b	
		a) Loss of Microphone output	a) Loss of voice communication over one channel.	a) Loss of voice communication over one channel.	a) Loss of voice communication	a) N/A	---
		b) Open.	b) None, due to redundant Channels.	b) Switch to redundant Channel.	b) Use Redundant channel for communication.	b) III-b	
		a) Loss of Tape Recorder output.	a) Loss of recorded voice data from one channel.	a) None	a) Recorded voice Telemetry data from one channel will be missing.	a) N.A.	---
		b) Open.	b) None, due to redundant channels.	b) None	b) Inform crew that voice data from one channel is missing.	b) III-b	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, Audio System Intercom A (B) (4-15) (4-16) 52-79721-320 (1 of 2) 2.1.03 2.1.04 (Provides circuit protection for the power circuitry of the Speaker Intercom.)	M	a) Open before break current is exceeded.	a) Loss of power to Speaker Intercom over Channel A (B).	a) Speaker Intercom is inoperable when Speaker Intercom Channel Select Switch is placed in a position so as to select affected channel. Circuit breaker's bat handle is in the "OFF" position.	a) Crew does not respond to MSFN Voice Communication.	a) N/A	- - -
		b) Internal defect, coil shorts to ground.	b) None - Alternate channel available.	b) Select alternate channel.	b) Inform crew via "Call" mode of loss of communication on other channel.	b) IIIb	
Circuit Breaker, Magnetic, Audio System CCU A (B) (4-55) (4-56) 52-79721-322 (1 of 2) 2.1.05 2.1.06 (Provides circuit protection for the power circuitry of the Crewmen Communication Umbilical)	M	a) Open before break current is exceeded.	a) Loss of power to the associated channel umbilical disconnects and to the associated channel CSM-AM Call Relay.	a) "Call" signal will be received only on Channel B (A) on the CCU. Circuit breaker's bat handle is in the "OFF" position.	a) None	a) N/A	- - -
		b) Internal defect, coil shorts to ground.	b) None due to redundant headset channels and to redundant "Call" capability via redundant circuitry.	b) Use alternate channel as primary communication channel.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Momentary, Push to Transmit #1 (K4-34) 52-79703-1 2.1.07 (Provides a Closure to Key the CSM S-Band Transmitters for Channel A.)	M	a) Coil fails open.	a) Loss of capability to transmit to ground via Channel A.	a) Ground does not respond to transmission over Channel A.	a) None	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant channels.	b) Select Channel B and perform transmission.	b) None	b) IIIb	
		a) Pole A fails open.	a) Loss of capability to transmit to ground via Channel A.	a) Ground does not respond to transmission over Channel A.	a) None	a) N/A	- - -
		b) Inculating film on contacts due to contamination.	b) None due to redundant channels.	b) Select Channel B and perform transmission.	b) None	b) IIIb	
		Pole B is a spare.					
Relay, Momentary, Push to Transmit #2 (K4-35) 52-79703-1 2.1.08 (Provides a Closure to Key the CSM S-Band Transmitters for Channel B.)	M	a) Coil fails open.	a) Loss of capability to transmit to ground via Channel B.	a) Ground does not respond to transmission over Channel B.	a) None	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant channels.	b) Select Channel A and perform transmission.	b) None	b) IIIb	
		a) Pole A fails open.	a) Loss of capability to transmit to ground via Channel B.	a) Ground does not respond to transmission over Channel B.	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundant channels.	b) Select Channel A and perform transmission.	b) None	b) IIIb	
		Pole B is a spare.					
Relay, Momentary, AM-CSM Call #1 (K4-32) 52-79703-43 2.1.09 (Provides a Closure to Trigger a "Call" Signal in the CSM.)	M	a) Coil fails open.	a) Loss of capability to activate "Call" mode in CSM and to connect the mike lines of Channel A and B via AM-CSM Call Relay #1.	a) None	a) None	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Momentary, AM-CSM Call #1 (K4-32) 52-79703-43 (Continued)	M	a) Pole A or B fails open.	a) Loss of capability to connect the mike lines of Channel A and B via AM-CSM Call Relay #1.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
		a) Pole C fails open.	a) Loss of capability to activate "Call" mode in CSM via AM-CSM Call Relay #1.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
		Pole D is a spare.					
Relay, Momentary, AM-CSM Call #2 (K4-33) 52-79703-43 2.1.10 (Provides a closure to trigger a "Call" signal in the CSM.)	M	a) Coil fails open.	a) Loss of capability to activate "Call" signal in CSM via DCS and the capability to connect the mike lines of Channel A and B via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
		a) Pole A or B fails open.	a) Loss of capability to connect the mike lines of Channel A, and B via AM-CSM call relay #2.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
		a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
		Pole D is a spare					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Momentary, CSM-AM Call #1 (K4-30) 52-79703-51 2.1.11 (Provides Ground and CSM capability to initiate the "Call" mode on Channel A and B.)	M	a) Coil fails open.	a) Loss of CSM and Ground capability to activate the "Call" signal on Channel A and to connect earphone lines of Channel A and B via CSM-AM Call Relay #1.	a) Crew does not respond to Channel A "Call" signal generated in CSM.	a) Crew whose S.I.A. is in the "A/Sleep" position will not respond to the "Crew Alert".	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant channels and associated relays.	b) Return to MDA and activate Channel A "Call" signal via Speaker Intercom Call Switch.	b) Request other crew member to activate the "Call" mode.	b) IIIB	
		a) Pole A or B fails open.	a) Crew in CSM and ground cannot tie Channel A and B earphone lines together via CSM-AM Call Relay #1.	a) Crew using Channel B does not respond to Channel A "Call" signal initiated from CSM.	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by CSM-AM Call Relay #2.	b) Activate Channel B "Call" signal via S.I.A. Call Switch in MDA.	b) None	b) IIIb	
		a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM from the remaining cluster and the capability to tie Channel A and B mike lines together via AM-CSM Call Relay #1.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
		a) Pole D fails open.	a) Loss of CSM and Ground capability to activate the "Call" signal on Channel A.	a) Crew does not answer Channel A "Call" signal generated from CSM.	a) Crew whose S.I.A. is in the "A/Sleep" position will not respond to the "Crew Alert".	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundant channels.	b) Return to MDA and activate Channel A "Call" signal via Speaker Intercom Call Switch.	b) Request other crew member to activate the "Call" mode.	b) IIIb	
		a) Pole E fails open.	a) Loss of CSM capability to activate the "Call" signal on Channel B.	a) Crew whose S.I.A. is in the "B/Sleep" position will not respond to CSM "Call" signal.	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by CSM-AM Call Relay #2.	b) Return to MDA and activate Channel B "Call" signal in S.I.A. Call Switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Momentary, CSM-AM Call #1 (K4-30) 52-79703-51 (Continued)	M	a) Pole F fails open.	a) Loss of capability to activate "Call" signal in CSM from the remaining cluster and the capability to tie Channel A and B mike lines together via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
Relay, Momentary, CSM-AM Call #2 (K4-31) 52-79703-43 2.1.12 (Provides Ground capability to initiate the "Call" mode on Channel B.)	M	a) Coil fails open.	a) Loss of ground capability to activate the "Call" signal on Channel B; and to connect earphone lines of Channel A and B via CSM-AM Call Relay #2.	a) None	a) None	a) N/A	- - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant channels and associated relays.	b) None	b) None	b) IIIb	
		a) Pole A or B fails open.	a) Ground cannot tie Channel A and B earphone lines together via CSM-AM Call Relay #2.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination	b) None due to redundant relays.	b) None	b) None	b) IIIb	
		a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM from the remaining cluster and the capability to tie Channel A and B mike lines together via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Momentary, CSM-AM Call #2 (K4-31) 52-79703-43 (Continued)	M	a) Pole D fails open.	a) Loss of Ground capability to activate the "Call" signal on Channel B via CSM-AM Call #2.	a) None	a) None	a) N/A	- - -
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by CSM-AM Call #1.	b) None	b) None	b) IIIb	
Circuit Breaker, Magnetic, Crew Alert 1 (11-27) 52-79721-322 2.1.13 (Provides circuit protection for the power circuitry for CSM-AM Call Relay #1.)	M	a) Opens before break current is exceeded.	a) Loss of Ground and CSM capebility to activate the "Call" signal on Channel A; and to connect earphone lines of Channel A and B via CSM-AM Call Relay #1.	a) Circuit breaker's bat handle is in the "OFF" position. Crew does not respond to Channel A "Call" signal generated in CSM.	a) Crew whose S.I.A. is in the "A/Sleep" position will not respond to the "Crew Alert".	a) N/A	- - -
		b) Internal defect, coil shorts to ground.	b) None due to redundant channels and associated relays.	b) Return to MDA and activate Channel A "Call" signal via S.I.A. Call Switch.	b) Request other crew members to activate the "Call" mode.	b) IIIb	
Circuit Breaker, Magnetic, Crew Alert 2 (11-28) 52-79721-322 2.1.14 (Provides circuit protection for the power circuitry for CSM-AM Call Relay #2.)	M	a) Opens before break current is exceeded.	a) Ground cannot tie Channel A and B earphone lines together via CSM-AM Call Relay #2.	a) Circuit breaker's bat handle is in the "OFF" position.	a) None	a) N/A	- - -
		b) Internal defect, coil shorts to ground.	b) None due to redundancy provided by CSM-AM Call Relay #1.	b) None	b) None	b) IIIb	
Circuit Breaker, Magnetic, Audio System Buffer Amp. 1 (4-52) 52-79721-322 2.1.1) (Provides circuit protection for the power circuitry of side 1 of the Audio Load Compensator.)	M	a) Opens before break current is exceeded.	a) Loss of power to side 1 of Audio Load Compensator A and B.	a) Circuit breaker bat handle will be in the "OFF" position.	a) None	a) N/A	- - -
		b) Internal defect, coil shorts to ground.	b) None due to redundancy provided by Audio System Buffer Amp 2 Circuit Breaker and internally redundant Audio Load Compensator.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, Audio System Buffer Amp 2 (4-53) 52-79721-322 2.1.16 (Provides circuit protection for the power circuitry of side 2 of the Audio Load Compensators.)	M	a) Opens before break current is exceeded. b) Internal defect, coil shorts to ground.	a) Loss of power to side 2 of Audio Load Compensator A and B. b) None due to redundancy provided by Audio System Buffer Amp 1 Circuit Breaker and internally redundant Audio Load Compensators.	a) Circuit breaker's bat handle will be in the "OFF" position. b) None	a) None b) None	a) N/A b) IIIb	- - -

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, Cmd. System Primary (4-4) 52-79721-322 2.2.01 (Provides protection for Primary DCS and associated circuitry).	L M S	a) Opens before break current is exceeded.	a) Loss of Primary DCS and "A" side of CRDU.	a) Affected circuit breaker "Bat Handle" indicates open.	a) T M input volts - DCS No. 1 data will indicate input power failure to Primary DCS.	a) N/A	----
		b) Internal defect, coil shorts to ground.	a) None. Due to redundant DCS's.	b) Select Secondary DCS by manual switching via Command System Switch if requested by ground.	b) Allow electronic timer to time out and turn on the Secondary DCS. Request crew to select Secondary DCS.	b) IIIb	
Circuit Breaker, Magnetic, Cmd. System Secondary (4-8) 52-79721-322 2.2.02 (Provide protection for Secondary DCS and associated circuitry).	L M S	a) Opens before break current is exceeded.	a) Loss of Secondary DCS.	a) Affected circuit breaker "Bat Handle" indicates open.	a) T M input volts - DCS No. 2 data will indicate input power failure to Secondary DCS.	a) N/A	----
		b) Internal defect, coil shorts to ground.	b) None. Due to redundant DCS's.	b) Select Primary DCS by manual switching via Command System Switch if requested by ground.	b) Allow electronic timer to time out and turn on the Primary DCS. Request crew to select Primary DCS.	b) IIIb	
Switch, Toggle, Cmd. System 52-79705-21 2.2.03 (Provides selection of Command, Primary, or Secondary modes of DCS operation).	L M S	a) Contact set (5, 4) fails open in "CMD" position	a) Loss of command turn on capability of Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate input power failure to Primary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Primary DCS by manual switching via Command System Switch if requested by ground.	b) Allow electronic timer to time out and turn on the Secondary DCS. Request crew to select Secondary DCS.	b) IIIb	
		a) Contact Set (8, 7) fails open in "CMD" position.	a) Loss of command turn on capability of Secondary DCS.	a) None	a) T/M input volts - DCS No. 2 data will indicate input power failure to Secondary DCS.	a) N/A	----
		b) Contamination.	b) None, function is required only in event of prior failure.	b) Select Secondary DCS by manual switching via Command System Switch if requested by ground.	b) Allow electronic timer to time out and attempt to turn on the Secondary DCS. Request crew to select Secondary DCS.	b) N/A (Multiple Failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle, Cmd. System (Continued)	L M S	a) Contact set (2,3) fails open in "PRI" position.	a) Loss of manual turn on capability of the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate input power failure to Primary DCS.	a) N/A	----
		b) Contamination	b) None. Due to redundant DCS's.	b) Select Secondary DCS if requested by ground via Command System Switch.	b) Allow electronic timer to time out and turn on Secondary DCS. Request crew to select Secondary DCS.	b) IIIb	
		a) Contact set (8, 9) fails open in "PRI" position.	a) None Loss of one set of redundant contacts to perform functions.	a) None	a) T/M data will indirectly indicate that the output of the Electronic Timers is not connected to the Primary DCS.	a) N/A	----
		b) Contamination.	b) None, Data Transfer Select Relay can still be latched.	b) Return switch to the "Sec" position then to the "Pri" position, upon ground request.	b) Request crew to return the switch to the "Sec" position then to "Pri".	b) IIIb	
		a) Contact set (11, 10) or (8, 9) fails open in "SEC" position.	a) Loss of manual turn on capability of Secondary DCS.	a) None	a) T/M input volts - DCS No. 2 data will indicate input power failure to Secondary DCS.	a) N/A	----
		b) Contamination	b) None. Due to redundant DCS's.	b) Select Primary DCS if requested by ground via Command System Switch.	b) Allow electronic timer to time out and turn on Primary DCS. Request crew to select Primary DCS.	b) IIIb	
		a) Contact set (11,12) fails open in "Pri" position.	a) Loss of manual capability of removing power from the Secondary DCS and side B of the CRDU.	a) None	a) T/M data will indicate power to the Secondary DCS and side B of the CRDU.	a) N/A	----
		b) Contamination	b) None, function can be performed by ground via primary DCS.	b) None	b) Remove power by selecting the reset position of Channel 27 via Primary DCS.	b) IIIb	
		Contact sets (2, 1), and (5,6) are spares. No Effect					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, DCS Primary Power (k4-4) 52-79703-53 2.2.04 (Transfers power to the Primary DCS.)	L M S	a) Latch coil fails open.	a) Loss of CMD. turn on capability of the Primary DCS.	a) None	a) TM input volts - DCS No. 1 data will indicate input power failure to the Primary DCS.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) Select Secondary DCS if requested by ground via Command System Switch.	b) Allow electronic timer to time out and turn on Primary DCS. Request crew to select Secondary DCS.	b) IIIb	
		a) Reset coil fails open.	a) Loss of CMD.capability to remove power from the Primary DCS.	a) None	a) TM input volts - DCS No. 1 data will indicate input power is still connected to the Primary DCS.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to circuit protection provided by CMD System Primary Circuit Breaker.	b) Trip CMD System Primary Circuit Breaker if requested by ground.	b) Request crew to trip the CMD System Primary Circuit Breaker.	b) IIIb	
		a) Pole B fails open in latch position.	a) Loss of CMD capability to remove power from the Primary DCS.	a) None	a) TM input volts - DCS No. 1 data will indicate input power is still connected to the Primary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to circuit protection provided by CMD System Primary Circuit Breaker.	b) Trip CMD System Pri. Circuit Breaker if requested by ground.	b) Request crew to trip the CMD System Primary Circuit Breaker.	b) IIIb	
		a) Pole B fails open in reset position.	a) Loss of CMD capability to turn on the Primary DCS.	a) None	a) TM input volts - DCS No. 1 data will indicate input power failure to the Primary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS if requested by ground via Command System Switch.	b) Allow electronic timer to time out and turn on Primary DCS. Request crew to select Secondary DCS.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of CMD capability to turn on the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate input power failure to the Primary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS if requested by ground via Command System Switch.	b) Allow electrinic timer to time out and turn on the Secondary DCS. Request crew to select Secondary DCS.	b) IIIb	

*COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, DCS Primary Power (Continued)		a) Pole D fails open in latch position.	a) Loss of electronic timer capability to turn on the Secondary DCS.	a) None	a) If electronic timer is allowed to time out by the Primary DCS T/M input volts - DCS No. 2 data will indicate input power failure to Secondary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS if requested by ground via Command System Switch.	b) Activate Secondary DCS via Primary DCS or request crew to select Secondary DCS.	b) IIIb	
		a) Pole D fails open in reset position.	a) Loss of electronic timer capability to turn on the Primary DCS.	a) None	a) If electronic timer is allowed to time out by the Secondary DCS, T/M input volts - DCS No. 1 data will indicate power failure to Primary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Primary DCS if requested by ground via Command System Switch.	b) Activate Primary DCS via Secondary DCS or request crew to select Primary DCS.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of command capability to connect the output of the electronic timers to the Secondary DCS.	a) None	a) T/M elapsed time data will indicate that the electronic timer did not switch to the Secondary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS via CMD System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request crew to select Secondary DCS.	b) IIIb	
		a) Pole F fails open in latch position.	a) Loss of command capability to reset TR-30 primary DCS On Relay.	a) None	a) T/M input volts - DCS No. 1 data will indicate power to the Primary DCS.	a) N/A	—
		b) Contamination. Pole A is used for GSE only - No effect.	b) None, function is only required in the event of prior failure.	b) None	b) None, continue mission with Primary DCS on.	b) N/A (Multiple Failures Required)	
Relay, Slow Release, DCS Primary Power Cntl. (K4-19) 52-79715-13 2.2.05 (Controls Latch- and Reset of DCS Primary Power Relay)	L M S	a) Coil fails open.	a) Loss of command capability to turn on or off the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate input power status to the Primary DCS.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundant DCS's and circuit protection provided by CMD System Pri. Circuit Breaker.	b) Select Primary DCS via CMD System Switch if requested by ground.	b) Allow electronic timer to time out and turn on the Primary DCS. Request the crew to select the Primary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release, DCS Primary Power Cntl. (Continued)		a) Pole A fails open.	a) Loss of command capability to turn on the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate input power failure to the Primary DCS.	a) N/A	---
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD System Switch if requested by ground.	b) Allow electronic timer to time out and turn on the Primary DCS. Request the crew to select the Primary DCS.	b) IIIb	
		a) Pole B fails open.	a) Loss of command capability to turn off the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate input power is still connected.	a) N/A	---
		b) Contamination.	b) None due to circuit protection provided by CMD System Pri. Circuit Breaker.	b) Select Secondary DCS via CMD System Switch if requested by ground.	b) None. During manned phases request crew to select Secondary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, TR-30 Primary DCS On (K4-5) 52-79703-45 2.2.06 (Provides Capability for the Electronic Timer TR-30 function to turn on the Primary DCS)	L M S	a) Latch coil fails open.	a) Loss of electronic timer, TR-30, capability to turn on the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate no power to Primary DCS.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Function is only required in the event of prior failure.	b) Select Primary DCS via CMD System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Primary DCS.	b) N/A (Multiple Failures required)	
		a) Reset coil fails open.	a) Loss of command capability to reset TR-30 Primary DCS On Relay	a) None	a) T/M input volts - DCS No. 1 data will indicate power to the Primary DCS.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) None	b) None. Continue mission using primary DCS	b) IIIb	
		a) Pole B fails open in latch position.	a) Loss of electronic timer, TR-30, capability to turn on the Primary DCS.	a) None	a) T/M input volts - DCS No. 1 data will indicate no power to Primary DCS.	a) N/A	---
		b) Contamination.	b) None. Function is only required in the event of prior failure.	b) Select Primary DCS via CMD System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Primary DCS.	b) N/A Multiple Failures required.	
		a) Pole C fails open.	a) Loss of command capability to connect the output of the electronic timers to the Secondary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	---
		b) Contamination.	b) None, due to redundant DCS's.	b) Select Secondary DCS via CMD System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) IIIb	
		Pole A is used for GSE only - No effect					
		Pole D is a spare No effect					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, TR-30 Secondary DCS ON K4-16 52-79703-45 2.2.07 (Provides capability for the Electronic Timer TR-30 Function to turn on the Secondary DCS)	L M S	a) Latch coil fails open.	a) Loss of electronic timer, TR-30, capability to turn on the Secondary DCS.	a) None	a) T/M input volts - DCS No. 2 will indicate no power to Secondary DCS.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Function is only required in event of prior failure.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request crew to select the Secondary DCS.	b) N/A (Multiple Failures required)	
		a) Reset coil fails open.	a) Loss of command capability to reset TR-30 Secondary DCS Relay.	a) None	a) T/M input volts - DCS No. 2 data will indicate power to the Secondary DCS.	a) N/A	
		b) Defective terminal or wire subject to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) None	b) None. Continue mission using Secondary DCS.	b) IIIb	
		a) Pole B fails open in latch position.	a) Loss of electronic timer, TR-30, capability to turn on the Secondary DCS.	a) None	a) T/M input volts - DCS No. 2 will indicate no power to Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Function is only required in event of prior failure.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request crew to select the Secondary DCS.	b) N/A (Multiple Failures required)	
		a) Pole C fails open in latch position.	a) Loss of electronic timer TR-30 capability to connect the electronic timers to the Secondary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Function is only required in event of prior failure.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) N/A (Multiple Failures required.)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, TR-30 Secondary DCS ON (Continued)		a) Pole D fails open in reset position.	a) Loss of command capability to connect the output of the electronic timers to the Primary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request the crew to select the Primary DCS.	b) IIIb	
		Pole A used for GSE only - No Effect.					
Relay, Latching, Data Transfer Cmd. (K4-8) 52-79703-53 2.2.08 (Provides Command capability to connect the output of the Electronic Timers to the desired DCS.)	L M S	a) Latch coil fails open.	a) Loss of command capability to connect the output of the electronic timers to the Secondary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) IIIb	
		a) Reset coil fails open.	a) Loss of command capability to connect the cutput of the electronic timers to the Primary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is connected to the Primary DCS.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request the crew to select the Primary DCS.	b) IIIb	
		a) Pole B fails open in latch position.	a) Loss of command capability to connect the output of the electronic timers to the Primary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Primary DCS.	a) N/A	----
		b) Contamination	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request the crew to select the Primary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Cmd. (Continued)		a) Pole B fails open in reset position.	a) Loss of command capability to connect the output of the electronic timers to the Secondary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of electronic timer Data Clock Input to the Secondary DCS when CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) IIIb	
		a) Pole C fails open in reset position.	a) Loss of electronic timer Data Clock Input to the Primary DCS. When CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Primary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request the crew to select the Primary DCS.	b) IIIb	
		a) Pole D fails open in latch position.	a) Loss of electronic timer Serial Data to the Secondary DCS when CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Cmd. (Continued)		a) Pole D fails open in reset position.	a) Loss of electronic timer Serial Data to the Primary DCS when CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Primary DCS.	a) N/A	
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request the crew to select the Primary DCS.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of TR Ready from the Secondary DCS to the electronic timers. When CMD. System Switch is in"CMD." position.	a) None	a) T/M data will indicate that the electronic timer TR-30 function has not been updated.	a) N/A	
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select Secondary DCS via CMD. System Switch if requested by ground.	b) Allow affected electronic timer to time out and activate the Primary DCS, or request the crew to select the Secondary DCS.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of TR Ready from the Primary DCS to the electronic timers when CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indicate that the electronic timer TR-30 function has not been updated.	a) N/A	
		b) Contamination	b) None. Due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Allow electronic timer to time out and activate the Secondary DCS or request the crew to select the Primary DCS.	b) IIIb	
		a) Pole F fails open in latch position.	a) Loss of TX Ready signal from the Secondary DCS to the electronic timers. When CMD. System Switch is in "CMD" position.	a) None	a) Ground may determine that PCM Data is being transmitted beyond programmed equipment shut down time.	a) N/A	
		b) Contamination.	b) None. Due to redundant DCS's.	b) Turn off affected equipment via manual switching upon ground request.	b) Have down range stations to turn off equipment via DCS or request crew to manually shut down affected equipment. Select Primary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Cmd. (Continued)		a) Pole F fails open in reset position. b) Contamination. Pole A used for GSE only - No Effect.	a) Loss of TX Ready signal from Primary DCS to the electronic timers. When CMD. System Switch is in "CMD" position. b) None. Due to redundant DCS's.	a) None b) Turn off affected equipment via manual switching upon ground request.	a) Ground may determine that PCM Data is being transmitted beyond programmed equipment shut down time. b) Have down range stations to turn off equipment via DCS or request crew to manually shut down affected equipment. Select Secondary DCS.	a) N/A b) IIIb	----

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release, Data Transfer CMD Cntl (K4-18) 52-79715-13 2.2.0) (Controls the Data Transfer Command Relay)	L M S	a) Coil fails open.	a) Loss of command capability to connect the output of the electronic timer to the selected DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the appropriate DCS.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant DCS's.	b) Select the desired DCS via CMD System Swith if requested by ground.	b) Activate the alternate DCS or request the crew to select the desired DCS.	b) IIIb	
		a) Pole A fails open.	a) Loss of command capability to connect the output of the electronic timers to the Secondary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Secondary DCS.	a) N/A	---
		b) Contamination.	b) None due to redundant DCS's.	b) Select Secondary DCS via CMD System Switch if requested by ground.	b) Activate Primary DCS via Secondary DCS or request the crew to select the Secondary DCS.	b) IIIb	
		a) Pole B fails open.	a) Loss of command capability to connect the output of the electronic timers to the Primary DCS.	a) None	a) T/M data will indirectly indicate that electronic timer is not connected to the Primary DCS.	a) N/A	---
		b) Contamination.	b) None due to redundant DCS's.	b) Select Primary DCS via CMD. System Switch if requested by ground.	b) Activate Secondary DCS via Primary DCS or request the crew to select the Primary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Man. (K4 - 10) 52-79703-53 2.2.10 (Provides the crew capability to connect the output of the Electronic Timers to the desired DCS.)	M	a) Latch coil fails open.	a) Loss of manual capability to connect the output of the electronic timers to the Primary DCS.	a) None.	a) T/M data will indirectly indicate that the output of the electronic timers is not connected to the Primary DCS.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Reset coil fails open.	a) Loss of manual capability to connect the output of the electronic timers to the Secondary DCS.	a) None.	a) T/M data will indirectly indicate that the output of the electronic timers is not connected to the Secondary DCS.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole B fails open in latch position.	a) Loss of manual capability to connect the output of the electronic timers to the Secondary DCS.	a) None.	a) T/M data will indirectly indicate that the output of the electronic timers is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole B fails open in reset position.	a) Loss of manual capability to connect the output of the electronic timers to the Primary DCS.	a) None.	a) T/M data will indirectly indicate that the output of the electronic timers is not connected to the Primary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of electronic timer Data Clock input to the Primary DCS when CMD System Switch is in "TRL" position.	a) None.	a) T/M data will indicate that the TR register of the electronic timer was not updated.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Man (K4 - 10) 52-79703-53 (Continued)		a) Pole C fails open in reset position.	a) Loss of electronic timer Data Clock input to the Secondary DCS when CMD.System Switch is in "SEC" position.	a) None.	a) T/M data will indicate that the TR Register of the electronic timer was not updated.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole D fails open in latch position.	a) Loss of electronic timer Serial Data to the Primary DCS when CMD System Switch is in "PRI" position.	a) None.	a) T/M data will indirectly indicate that the output of the electronic timers is not connected to the Primary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole D fails open in reset position.	a) Loss of Electronic timer Serial Data to the Secondary DCS when CMD System Switch is in "SEC" position.	a) None.	a) T/M data will indirectly indicate the output of the electronic timer is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of TR Ready from the Primary DCS to the electronic timers when CMD System Switch is in "PRI" position.	a) None.	a) T/M data will indicate that the electronic timer TR register has not been updated.	a) N/A	----
		b) Contamination .	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Allow affected electronic timer to time out and activate the Secondary DCS or request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of TR Ready from the Secondary DCS to the electronic timers when CMD System Swith is in "SEC" position.	a) None.	a) T/M data will indicate that the electronic timer TR register has not been updated.	a) N/A	----

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Man (K4 - 10) 52-79703-53 (Continued)		b) Contamination .	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Allow Affected electronic timer to time out and activate the Primary DCS or request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole F fails open in latch position.	a) Loss of TX Ready signal from the Primary DCS to the electronic timers when CMD System Switch is in "PRI" position.	a) None.	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	----
		b) Contamination	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole F fails open in reset position.	a) Loss of TX Ready signal from the Secondary DCS to the electronic timers when the CMD System Switch is in "SEC" position.	a) None.	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	----
		b) Contamination	b) None. Due to redundant DCS's.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		Pole A used for GSE only - No effect					
Relay, Slow Release, Data Transfer Man CNTL (K4 - 6) 52-79715-13 2.2.11 (Controls the data Transfer Man. Relay)	M	a) Coil fails open.	a) Loss of manual capability to connect the output of the electronic timers to alternate DCS's.	a) None.	a) T/M data will indirectly indicate that the manually selected DCS is not connected to the electronic timer.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundancy provided by ground's capability to perform switching function via DCS.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release, Data Transfer Man CNTL (Continued)		a) Pole A fails open.	a) Loss of manual capability to connect the output of the electronic timers to the Primary DCS.	a) None	a) T/M data will indirectly indicate that the output of the electronic timers is not connected to the Primary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to the "CMD" position and perform the switching function via DCS.	b) IIIb	
		a) Pole B fails open.	a) Loss of manual capability to connect the output of the electronic timers to the Secondary DCS.	a) None	a) T/M data will indirectly indicate the output of the electronic timers is not connected to the Secondary DCS.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
Relay, Latching, Data Transfer SELECT (K4 - 7) 52-79703-53 2.2.12 (Provides control to select either manual or command control of connecting the Electronic Timers to the DCC's.)	L M S	a) Latch coil fails open.	a) Loss of manual capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data will indirectly indicate that the manually selected DCS is not connected to the electronic timers.	a) N/A	----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None. Due to redundant DCS's.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Reset coil fails open.	a) Loss of command capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data will indirectly indicate that the command selected DCS is not connected to the electronic timers.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select desired DCS via CMD. System Switch if requested by ground.	b) Use alternate DCS or request crew to select desired DCS via CMD. System Switch.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer SELECT (Continued)		a) Pole B fails open in latch position.	a) Loss of command capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data will indirectly indicate that the command selected DCS is not connected to the electronic timer.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Select desired DCS via CMD. System Switch if requested by ground.	b) Use alternate DCS or request crew to select desired DCS via CMD. System Switch.	b) IIIb	
		a) Pole B fails open in reset position.	a) Loss of manual capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data will indirectly indicate the manually selected DCS is not connected to the electronic timers.	a) N/A	----
		b) Contamination.	b) None. Due to redundant DCS's.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of electronic timer Data Clock input to the DCS's when the CMD. System Switch is in "PRI" or "SEC" positions.	a) None	a) T/M data will indicate that the TR Register of the electronic timer was not updated.	a) N/A	----
		b) Contamination.	b) None, due to redundancy provided by ground's capability to perform switching function via DCS.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole C fails open in reset position.	a) Loss of electronic timer Data Clock input to the DCS's when the CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indicate that the TR Register of the electronic timer was not updated.	a) N/A	----
		b) Contamination.	b) None. DCS's can function without the electronic timers.	b) None	b) Activate standby DCS and continue mission with both DCS's operating.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer SELECT (Continued)		a) Pole D fails open in latch position.	a) Loss of electronic timer Serial Data to the DCS's when CMD. System Switch is in "PRI" or "SEC" positions.	a) None	a) T/M data will indicate that the TR Register of the electronic timer was not updated.	a) N/A	----
		b) Contamination.	b) None, due to redundancy provided by ground's capability to perform switching function via DCS.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole D fails open in reset position.	a) Loss of electronic timer Serial Data to the DCS's when CMD. System Switch is in "CMD" position.	a) None	a) T/M data will indicate that the TR Register of the electronic timer was not updated.	a) N/A	----
		b) Contamination.	b) None, DCS's can function without the electronic timers.	b) None	b) Activate standby DCS and continue mission with both DCS's operating.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of TR Ready from the DCS's to the electronic timers when CMD. System Switch is in the "PRI" or "SEC" position.	a) None	a) T/M data will indicate that the electronic timer TR-30 Register has not been updated.	a) N/A	----
		b) Contamination.	b) None due to redundancy provided by ground's capability to perform switching function via DCS.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD. System Switch to "CMD" position and perform switching function via DCS.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of TR Ready from the DCS's to the electronic timers when CMD. System Switch is in the "CMD" position.	a) None	a) T/M data will indicate that the electronic timer TR-30 Register has not been updated.	a) N/A	----
		b) Contamination.	b) None, DCS's can function without the electronic timers.	b) None	b) Activate standby DCS and continue mission with both DCS's operating.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Data Transfer Select. (Continued)		a) Pole F fails open in latch position.	a) Loss of TX Ready signal from the DCS's to the electronic timers when CMD. System Switch is in the "PRI" or "SEC" positions.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	----
		b) Contamination.	b) None due to redundancy provided by ground's capability to perform switching function via DCS.	b) Switch CMD. System Switch to "CMD" position if requested by ground.	b) Request crew to place the CMD. System Switch in the CMD. position and perform switching function via Data Transfer CMD. Relay by DCS Relay.	b) IIIb	
		a) Pole F fails open in reset position.	a) Loss of TX Ready signal from the DCS's to the electronic timers when CMD. System Switch is in the "CMD" position.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	----
		b) Contamination. Pole A used for GSE only - No Effect.	b) None, DCS's can function without the electronic timer.	b) Select desired DCS via CMD. System Switch if requested by ground.	b) Request crew to select desired DCS via CMD. System Switch.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Slow Release, Data Transfer Select Cntl. (K4-9) 52-79715-13 2.2.13 (Controls the Data Transfer Select Relay.)	L M S	a) Coil fails open.	a) Loss of command and manual capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data of the TR Register will indicate that the selected DCS in not connected to the electronic timers.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, DCS can function without electronic timers.	b) Attempt switching function via CMD System Switch upon ground request.	b) Request crew to attempt switching function. Activate standby DCS and continue mission with both DCS's powered up.	b) IIIb	
		a) Pole A fails open.	a) Loss of manual capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data of the TR Register will indicate that the manually selected DCS is not connected to the electronic timers.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability.	b) Switch CMD System Switch to "CMD" position if requested by ground.	b) Request crew to switch the CMD System Switch to "CMD." position and perform switching function via DCS.	b) IIIb	
		a) Pole B fails open.	a) Loss of command capability to connect the output of the electronic timers to alternate DCS's.	a) None	a) T/M data of TR Register will indicate that the selected DCS is not connected to the electronic timers.	a) N/A	---
		b) Contamination.	b) None, DCS can function without electronic timers.	b) Select desired DCS via CMD System Switch if requested by ground.	b) Request crew to select desired DCS via CMD. System Switch. Activate standby DCS and continue mission with both DCS's powered up.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select #1 (K4-13) 52-79703-53 2.2.14 (Provides Command Capability to Select Either Primary or Secondary Electronic Timer.)	L M S	a) Latch coil fails open.	a) Cannot select the output of the Secondary Electronic Timer via Electronic Timer Select Relay #1.	a) None	a) T/M data will indicate that the TR Register of the Secondary Electronic Timer was not updated.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundancy provided by Electronic Timer Select Relay #2 and #4.	b) None	b) Reset relay and perform switching function via Electronic Timer Select Relay #2 and #4.	b) IIIb	---
		a) Reset coil fails open.	a) Cannot select the Primary Electronic Timer.	a) None	a) T/M data will indicate that the TR Register of the Primary Electronic Timer was not updated.	a) N/A	---
		b) Contamination.	b) None due to redundancy provided by Secondary Electronic Timer.	b) None	b) Select Secondary Electronic Timer.	b) IIIb	
		a) Pole C fails open in reset position.	a) Loss of Primary Electronic Timer Data Clock input to the DCS's.	a) None	a) T/M data will indirectly indicate that the output of the Primary Electronic Timer is not connected to the DCS's.	a) N/A	---
		b) Contamination.	b) None due to redundant electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of Secondary Electronic Timer Data Clock input to the DCS's.	a) None	a) T/M data will indirectly indicate that the output of the Secondary Electronic Timer was not updated.	a) N/A	---
		b) Contamination.	b) None due to redundant electronic timers.	b) None	b) Reset relay and continue mission using the Primary Electronic Timer.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select #1 (Continued)		a) Pole D fails open in latch position.	a) Loss of Secondary Electronic Timer Serial Data to the DCS's.	a) None	a) T/M data will indicate that the TR Register of the Secondary Electronic Timer was not updated.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Reset relay and continue mission using the Primary Electronic Timer.	b) IIIb	
		a) Pole D fails open in reset position.	a) Loss of Primary Electronic Timer Serial Data to the DCS's.	a) None	a) T/M data will indicate that TR Register of the Primary Electronic Timer was not updated.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of TR Ready Signal from the DCS's to the Secondary Electronic Timer.	a) None	a) T/M data will indicate that the Secondary Electronic Timer TR-30 function has not been updated.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Reset relay and continue mission using the Primary Electronic Timer.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of TR Ready Signal from the DCS's to the Primary Electronic Timer.	a) None	a) T/M data will indicate that the Primary Electronic Timer TR-30 function has not been updated.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic Timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole F fails open in latch position.	a) Loss of TX Ready Signal from the DCS's to the Secondary Electronic Timer.	a) None	a) T/M data will indicate that the Secondary Electronic Timer update has not occurred.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Reset relay and continue mission using the Primary Electronic Timer.	b) IIIb	
		a) Pole F fails open in reset position.	a) Loss of TX Ready Signal from the DCS's to the Primary Electronic Timer.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Timer.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATION
Relay, Latching, Electronic Timer Select #1 (Continued)		Pole A used for GSE only - No effect					
Relay, Latching, Electronic Timer Select #2 (K4-14) 52-79703-53 2.2.15 (Provides Command Capability to Select Either Primary or Secondary Electronic Timer.)	L M S	a) Latch coil fails open.	a) Loss of capability to select the output of the Secondary Electronic Timer.	a) None	a) T/M data will indicate that the TR Register of the Secondary Timer was not updated.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #1.	b) None	b) Perform switching function via Electronic Timer Select Relay #1.	b) IIIb	
		a) Reset coil fails open.	a) Cannot select the Primary Electronic Timer.	a) None	a) T/M data will indicate that the Primary Electronic Timer has not been powered up.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant Electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of Secondary Electronic Timer Data Clock input to the DCS's.	a) None	a) T/M data will indirectly indicate that the output of the Secondary Electronic Timer is not connected to the DCS's.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #1.	b) None	b) Perform switching function via Electronic Timer Select Relay #1.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching Electronic Timer Select #2 (Continued)		a) Pole C fails open in reset position.	a) Loss of Primary Electronic Timer Data Clock input to the DCS's.	a) None	a) T/M data will indirectly indicate that the output of the Primary Electronic Timer is not connected to the DCS's.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole D fails open in latch position.	a) Loss of Secondary Electronic Timer Serial Data to the DCS's.	a) None	a) T/M data will indicate that the TR Register of the Secondary Electronic Timer was not updated.	a) N/A	- - - -
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #1.	b) None	b) Perform switching function via Electronic Timer Select Relay #1.	b) IIIb	
		a) Pole D fails open in reset position.	a) Loss of Primary Electronic Timer Serial Data to the DCS's.	a) None	a) T/M data will indicate that the TR Register of the Primary Electronic Timer was not updated.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of TR Ready signal from the DCS's to the Secondary Electronic Timer.	a) None	a) T/M data will indicate that the Secondary Electronic Timer TR-30 function has not been updated.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #1.	b) None	b) Perform switching function via Electronic Timer Select Relay #1.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of TR Ready signal from the DCS's to the Primary Electronic Timer.	a) None	a) T/M data will indicate that the Primary Electronic Timer TR-30 function has not been updated.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select #2 (Continued)		a) Pole F fails open in latch position.	a) Loss of TX Ready signal from the DCS's to the Secondary Electronic Timer.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	—
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #1.	b) None	b) Perform switching function via Electronic Timer Select Relay #1.	b) IIIb	
		a) Pole F fails open in reset position.	a) Loss of TX Ready signal from the DCS's to the Primary Electronic Timer.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shut down time.	a) N/A	---
		b) Contamination.	b) None due to redundant electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		Pole A used for GSE only - no effect.					
Relay, Latching, Electronic Timer Select Relay #4 (K4-15) 52-79703-53 2.2.16 (Provides Command Capability to Select Either Primary or Secondary Electronic Timer to the PCM System.)	L M S	a) Latch coil fails open.	a) Loss of Secondary Electronic Timer data to programmers.	a) None	a) T/M data will indicate loss of Secondary Electronic Timer data to programmers.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #3.	b) None	b) Perform switching function via Electronic Timer Select Relay #3.	b) IIIb	
		a) Reset coil fails open.	a) Loss of Primary Electronic Timer data to the programmers.	a) None	a) T/M data will indicate loss of Primary Electronic Timer data to programmers.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant Electronic Timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select Relay #4 (KA-15) 52-79703-53) (Continued)		a) Pole C fails open in latch position.	a) Loss of time information from the Secondary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of time information from the Secondary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #3.	b) None	b) Perform switching function via Electronic Timer Select Relay #3.	b) IIIb	
		a) Pole C fails open in reset position.	a) Loss of time information from the Primary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole D fails open in latch position.	a) Loss of time information from the Secondary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of time information from the Secondary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #3.	b) None	b) Perform switching function via Electronic Timer Select Relay #3.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION f) ACTION	GROUND e) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select #4 (Continued)		a) Pole D fails open in reset position.	a) Loss of time information from the Primary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of DCS Reset Time from the Secondary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of DCS Reset Time from the Secondary Electronic Timer.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #3.	b) None	b) Perform switching function via Electronic Timer Select Relay #3.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of DCS Reset Time from the Primary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of DCS Reset Time from the Primary Electronic Timer.	a) N/A	---
		b) Contamination.	b) None due to redundant electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole F fails open in latch position.	a) Loss of Elapsed Time Request from the programmers to the Secondary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Secondary Electronic Timer.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #3.	b) None	b) Perform switching function via Electronic Timer Select #3.	b) IIIb	
		a) Pole F fails open in reset position.	a) Loss of Elapsed Time Request from the programmers to the Primary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic Timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select Relay #3 (K4-11) 52-79703-61 2.2.17 (Provides Command Capability to Select Either Primary or Secondary Electronic Timer to the PCM System.)	L M S	a) Latch coil fails open.	a) Secondary Electronic Timer cannot be powered up, nor connected to PCM System via Electronic Timer Select Relay #3.	a) None	a) T/M data will indicate that the Secondary Electronic Timer is not powered up.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #4.	b) None	b) Perform switching function via Electronic Timer Select Relay #4.	b) IIIb	
		a) Reset coil fails open.	a) Loss of time information from the Primary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundant electronic timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole B fails open in reset position.	a) Secondary Electronic Timer cannot be powered up via Electronic Select Relay #4.	a) None	a) T/M data will indicate that the Secondary Electronic Timer is not powered up.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #4.	b) None	b) Latch relay and perform switching function via Electronic Timer Select Relay #4.	b) IIIb	
		a) Pole C fails open in latch position.	a) Loss of time information from the Secondary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Secondary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #4.	b) None	b) Reset relay and perform switching function via Electronic Timer Select Relay #4.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select #3 (Continued)		a) Pole C fails open in reset position.	a) Loss of time information from the Primary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic Timers.	b) None	b) Latch-relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole D fails open in latch position.	a) Loss of time information from the Secondary Electronic Timer to the programmer.	a) None	a) T/M data will indicate loss of time information from the Secondary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #4.	b) None	b) Reset relay and perform switching function via Electronic Timer Select Relay #4.	b) IIIb	
		a) Pole D fails open in reset position.	a) Loss of time information from the Primary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer to the programmers.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic Timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
		a) Pole E fails open in latch position.	a) Loss of DCS Reset Time from the Secondary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of DCS Reset Time from the Secondary Electronic Timer.	a) N/A	---
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #4.	b) None	b) Reset relay and perform switching function via Electronic Timer Select Relay #4.	b) IIIb	
		a) Pole E fails open in reset position.	a) Loss of DCS Reset Time from the Primary Electronic Timer to the programmers.	a) None	a) T/M data will indicate loss of DCS Reset Time from the Primary Electronic Timer.	a) N/A	---
		b) Contamination.	b) None due to redundant Electronic Timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Electronic Timer Select #3 (Continued)		a) Pole F fails open in latch position.	a) Loss of Elapsed Time Request from the programmers to the Secondary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Secondary Electronic Timer.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None due to redundant switching capability provided by Electronic Timer Select Relay #4.	b) None	b) Reset relay and perform switching function via Electronic Timer Select Relay #4.	b) IIIb	
		a) Pole F fails open in reset position.	a) Loss of Elapsed Time Request from the programmers to the Primary Electronic Timer.	a) None	a) T/M data will indicate loss of time information from the Primary Electronic Timer.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None due to redundant Electronic Timers.	b) None	b) Latch relay and continue mission using the Secondary Electronic Timer.	b) IIIb	
Primary or Secondary Electronic Timer 61B850016 (The Electronic Timer provides elapsed time data to programmers, Timer Correlation Buffer and DCS, and turns on the Secondary DCS in event of failure of the Primary DCS.) 2.2.18A 2.2.18D	L M S	a) Loss of TX = 0, #1 Contact Closure, TX=0 Contact #1 Return or Time to TX/DCS.	a) Loss of TX equipment reset function.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shutdown time.	a) N/A	- - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) Turn off affected equipment via manual switching upon ground request.	b) Have down range stations to turn off equipment via DCS command or request crew to manually shut down the equipment. Select alternate timer, update, continue mission.	b) IIIb	
		a) Loss of +12 volts to DCS, DCS Serial Data, Data Clock to DCS Return, Data Clock to DCS, or DCS Serial Data Return.	a) Loss of data transfer from DCS to electronic timer.	a) None	a) T/M data will indicate that electronic timer update has not occurred.	a) N/A	- - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) Turn off affected equipment via manual switching upon ground request.	b) Select alternate electronic timer, update, and continue mission.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Primary or Secondary Electronic Timer 61E350016 (Continued)	L M S	a) Loss of +12 volt to PCM, Data Clock to PCM Return, PCM Serial Data Return, or PCM Serial Data.	a) Loss of data transfer from the electronic timer to the PCM programmers.	a) None	a) T/M data will indicate loss of electronic timer data to the PCM programmers.	a) N/A	- - - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) None	b) Select alternate electronic timer, update, and continue mission.	b) IIIb	
		a) Loss of time to TR/DCS.	a) Loss of DCS update command to TR Register of the electronic timer.	a) None	a) T/M data will indicate that the TR Register has not been updated.	a) N/A	- - - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) None	b) Select alternate electronic timer, update, and continue mission.	b) IIIb	
		a) Loss of Elapsed Time/PCM.	a) Loss of Elapsed Time data to programmers and Elapsed Time Register cannot be updated.	a) None	a) T/M data will indicate loss of Elapsed Time data from electronic timer.	a) N/A	- - - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) None	b) Select alternate electronic timer, update, and continue mission.	b) IIIb	
		a) Loss of Time To TR/PCM.	a) Loss of T/M data of TR Register.	a) None	a) Loss of T/M data on TR Register of the electronic timer.	a) N/A	- - - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) None	b) Select alternate electronic timer, update, and continue mission.	b) IIIb	
		a) Loss of Bio-Med Clock Return or Bio-Med Clock.	a) Loss of clocking pulse from the electronic timer to the Digital Clock.	a) Loss of visual elapsed time data from the Digital Clock.	a) None	a) N/A	- - - - - - - - - -
		b) Open.	b) None due to redundant electronic timers.	b) Inform ground of failure and request ground to select the alternate electronic timer.	b) Select alternate electronic timer, update, and continue mission if requested by crew	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Primary or Secondary Electronic Timer (Continued)	L M S	a) Loss of TR-30 Sec Contact Return.	a) Loss of TR-30 pulse to turn on the stand-by DCS.	a) None	a) T/M data will indicate that the stand-by DCS is not turned on when the TR Register of the timer has counted down.	a) N/A	- - - - - - - -
		b) Open	b) None, function is required only in event of prior failure.	b) None	b) Attempt to activate the stand-by DCS via active DCS.	b) N/A (Multiple Failures required)	
		a) Loss of TX=0 Contact #2 Return.	a) Loss of capability to update the Time Correlation Buffer to Greenwich Mean Time	a) Digital Display Units will not be updated to Greenwich mean. Time.	a) None	a) N/A	----------
		b) Mechanical or thermal Stress.	b) None due to redundancy provided by alternate Electronic Timer.	b) Inform Ground of discrepancy. Reset Time Correlation Buffer via Time Reference System Switch if requested by Ground.	b) Update Time Correlation Buffer via alternate Electronic Timer or request crew to zero the Time Correlation Buffer via Time Reference System Switch.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Primary or Secondary Electronic Timer (Continued)	L M S	a) Loss of 8 PPS to the Time Correlation Buffer.	a) Loss of synchronization between the oscillators of the Electronic Timer and Time Correlation Buffer.	a) The "second" indicator will not be in synchronization with the "minute" indicator of the Digital Display Unit.	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal Stress.	b) None, due to redundant Electronic Timers.	b) Inform Ground of discrepancy.	b) Select alternate Electronic Timer and continue mission.	b) IIIb	
		a) Loss of ET Clock or ET Data to the Time Correlation Buffer.	a) Loss of data transfer from the Electronic Timer to the Time Correlation Buffer.	a) Loss of elasped time data from the Digital Display Unit.	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal Stress.	b) None, due to redundant Electronic Timers.	b) Inform Ground of discrepancy.	b) Select alternate Electronic Timer and continue mission.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Digital Clock 61B850011 (Digital Clock provides visual elapsed time data to the crew.) 2.2.19	M	a) Erroneous elapsed time data.	a) Loss of the Digital Clock to measure elapsed time.	a) Digital Clock data will differ from ground data.	a) None	a) N/A	---
		b) Thermal or mechanical over stress of components.	b) None due to redundancy provided by ground data and the Portable Timer.	b) Request elapsed time data from ground.	b) Provide requested data to crew.	b) IIIb	
Circuit Breaker, Magnetic, Time Reference Timer (4-35) 52-79721-322 2.2.20 (Provides circuit protection for the Digital Clock.)	M	a) Opens before break current is exceeded.	a) Loss of the Digital Clock to measure elapsed time.	a) Digital Clock will be stopped.	a) None	a) N/A	---
		b) Internal defect, coil shorts to ground.	b) None due to redundancy provided by ground data and the Portable Timer.	b) Request elapsed time data from ground.	b) Provide requested data to crew.	b) IIIb	
Circuit Breaker, Magnetic, Time Reference Pri. (4-28) 52-79721-322 2.2.21 (Provides circuit protection for the Primary Electronic Timer.)	L M S	a) Opens before break current is exceeded.	a) Loss of Primary Electronic Timer.	a) Affected circuit breaker "Bat Handle" indicates open.	a) T/M data will indicate loss of output from Primary Electronic Timer.	a) N/A	- - - - - - - - - -
		b) Internal defect, coil shorts to ground.	b) None due to redundant Electronic Timers.	b) None	b) Select Secondary Electronic Timer via DCS, update, and continue mission.	b) IIIb	
Circuit Breaker, Magnetic, Time Reference Sec. (4-27) 52-79721-322 2.2.22 (Provides circuit protection for the Secondary Electronic Timer.)	L M S	a) Opens before break current is exceeded.	a) Loss of Secondary Electronic Timer.	a) Affected circuit breaker "Bat Handle" indicates open.	a) T/M data will indicate loss of output from the Secondary Electronic Timer.	a) N/A	- - - - - - - - - -
		b) Internal defect, coil shorts to ground.	b) None due to redundant electronic timers.	b) None	b) Select Primary Electronic Timer via DCS, update, and continue mission.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Primary or Secondary DCS Receiver Decoder 52-85714-27 (DCS Receiver Decoder Receives and decodes Ground Commands and actives the appropriate relays in the DCS Modules or sends the command to the CRDU). 2.2.24A 2.2.24B	L M S	a) Loss of Data Clock Ready Pulse, or Data Output to the CRDU.	a) Loss of data transfer from the DCS to the associated side of CRDU.	a) None	a) T/M data will indicate that the associated side of CRDU does not respond to the DCS commands.	a) N/A	- - -
		b) Open.	b) None due to redundant DCS's.	b) None	b) Select the alternate DCS and continue the mission.	b) III b	
		a) Loss of TX Ready to electronic timers.	a) Loss of TX Equipment Reset function.	a) None	a) Ground may determine that PCM data is being transmitted beyond programmed equipment shutdown time.	a) N/A	- - -
		b) Open.	b) None due to redundant DCS's.	b) Turn off affected equipment via manual switching if requested by ground.	b) Have down range stations to turn off equipment via DCS or request crew to manually shut down affected equipment. Select alternate DCS and continue the mission.	b) III b	
		a) Loss of TR Ready to electronic timers.	a) Loss of DCS update command to TR Register of the electronic timers.	a) None	a) T/M data will indicate that the TR Register has not been updated.	a) N/A	- - -
		b) Open.	b) None due to redundant DCS's.	b) None	b) Select alternate DCS and continue mission.	b) III b	
		a) Loss of DCS verification signal to T/M.	a) Loss of data word transfer and relay "actuation" verification to ground from affected DCS.	a) None	a) DCS verification is not received after ground command.	a) N/A	- - -
		b) Open.	b) None, due to redundant DCS's.	b) None	b) Select alternate DCS, continue mission.	b) IIIb	
		a) Loss of Rcvr. #1 or #2 signal strength signal to T/M.	a) Loss of affected Rcvr strength signal to ground via T/M.	a) None	a) Affected Rcvr. strength signal is not received via T/M.	a) N/A	
		b) Open.	b) None due to redundant Rcvrs.	b) None	b) None, due to redundant receivers in each DCS.	b) IIIb	- - -

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Primary or Secondary DCS Receives Decoder 52-85714-27 (Continued)	M	a) Loss of Vehicle address recognition, Bit sync., System address interrogate, or Zero bit recognition of connector P14.	a) Loss of data transfer from the DCS to the Interface Electronics Unit.	a) None	a) T/M data Message Complete will indicate loss of data transfer to the Interface Electronics Unit.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the alternate DCS Receiver Decoder.	b) None	b) Use the alternate DCS Receiver Decoder.	b) IIIb	
		a) Loss of Serial Data Return or Data Clock Return to Electronic Timer.	a) Loss of data transfer between the DCS and Electronic Timer.	a) None	a) T/M data will indicate that the TR Register of the Electronic Timer update has not occurred.	a) N/A	----
		b) Open.	b) None due to redundant DCS's.	b) None	b) Select alternate DCS and continue the mission.	b) IIIb	
		a) Loss of output to DCS relay module (any 1 of 32 signals).	a) Temporary loss of affected "Real Time" command capability (Reference MDAC-ED Report F639, Vol. II for complete list of command function.)	a) None	a) DCS verification via T/M system will indicate loss of affected command.	a) N/A	----
		b) Open.	b) None due to redundant DCS Receiver Decoders.	b) None	b) Select alternate DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-85714-21 (DCS Molule contains 8 relays which are controlled by the DCS Receiver Decoders to provide real time contact closures)	L M S	a) Channel 1 relay "Norm" contacts fail open.	a) Loss of Battery Charger No. 1.	a) Amp-Hour Meter will indicate absence of output from Battery Charger 1.	a) T/M Data of the Amp-Hour Meter will indicate the absence of output from Battery Charger 1.	a) N/A	--------
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the #1 Charger Switch.	b) Execute CRDU Command S10 "Charger 1 By-pass".	b) IIIb	
2.2.25		a) Channel 1 relay "Norm" coil fails open.	a) Loss of Battery Charger No. 1.	a) Amp-Hour Meter will indicate absence of output from Battery Charger 1.	a) T/M data will indicate that DCS Channel 1 relay did not switch.	a) N/A	--------
		b) Defective Terminal or wire subjected to mechanical or thermal stress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the #1 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S10 "Charger 1 By-pass".	b) IIIb	
		a) Channel 1 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 1.	a) Amp-Hour Meter will indicate output from Battery Charger 1.	a) T/M data will indicate that CDS Channel 1 relay did not switch.	a) N/A	--------
		b) Defective Terminat or wire subjected to mechanical or thermal stress.	b) None, Function required only in event of prior failure.	b) Select the "By-pass" position of the #1 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S10 "Charger 1 By-pass".	b) N/A (Multiple failures required)	
		Channel 1 relay "Cutoff" contacts are not used.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-85714-21 (Continued)	L M S	a) Channel 3 relay "On" contacts fail open.	a) Loss of command capability to power Deploy Bus 1 and 2 via DCS System.	a) None	a) T/M data will indicate that Deploy Bus 1 and 2 are not powered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) Perform switching function via Deploy Bus Arm Switch if requested by Ground.	b) Request crew to perform switching function via Deploy Bus Arm Switch.	b) N/A (Multiple failures required)	
		a) Channel 3 relay "Off" contacts fail open.	a) Loss of command capability to remove power from Deploy Bus 1 and 2 via DCS System Channel 3.	a) None	a) T/M data will indicate that Deploy Bus 1 and 2 are still powered after executing Channel 3 "Off" command.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by Channel 8.	b) None	b) Remove power via DCS Channel 8 "Safe" command.	b) IIIb	
		a) Channel 3 relay "On" coil fails open	a) Loss of command capability to power Deploy Bus 1 and 2 via DCS System.	a) None	a) T/M data will indicate that DCS Channel 3 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - function required only in event of prior failure.	b) Perform switching function via Deploy Bus Arm Switch if requested by Ground.	b) Request crew to perform switching function via Deploy Bus Arm Switch.	b) N/A (Multiple failures required)	
		a) Channel 3 relay "Off" coil fails open.	a) Loss of Command capability to remove power from Deploy Bus 1 and 2 via DCS System Channel 3.	a) None	b) T/M data will indicate that DCS Channel 3 relay did not switch.	a) N/A	
		b) Defective Terminal or wire subjected to mechanical or thermal overstress.	b) None due to redundancy provided by Channel 8.	b) None	b) Remove power via DCS Channel 8 "Safe" command.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-85714-21 (Continued)	L M S	a) Channel 8 relay "Arm" contacts fail open.	a) Loss of command capability to power Deploy Bus 1 and 2 via DCS System.	a) None	a) T/M data will indicate that Deploy Bus 1 and 2 are not powered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) Perform switching function via Deploy Bus Arm Switch if requested by Ground.	b) Request crew to perform switching function via Deploy Bus Arm Switch.	b) N/A (Multiple failures required)	
		a) Channel 8 relay "Safe" contacts fail open.	a) Loss of command capability to remove power from Deploy Bus 1 and 2 via DCS System Channel 8.	a) None	a) T/M data will indicate that Deploy Bus 1 and 2 are still powered after executing Channel 8 "Safe" command.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by Channel 3.	b) None	b) Remove power via DCS Channel 3 "Off" command.	b) IIIb	
		a) Channel 8 relay "Arm" coil fails open.	a) Loss of command capability to power Deploy Bus 1 or 2 via DCS System.	a) None	a) T/M data will indicate that DCS Channel 8 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - Function required only in event of prior failure.	b) Perform switching function via Deploy Bus Arm Switch if requested by Ground.	b) Attempt switching function via alternate DCS Receiver Decoder. Request crew to perform switching function via Deploy Bus Arm Switch.	b) N/A (Multiple failures required)	
		a) Channel 8 relay "Safe" coil fails open.	a) Loss of command capability to remove power from Deploy Bus 1 and 2 via DCS System Channel 8.	a) None	a) T/M data will indicate that Deploy Bus 1 and 2 are still powered after executing Channel 8 "Safe" command.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None due to redundancy provided by Channel 3.	b) None	b) Remove power via DCS Channel 3 "OFF" command.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-85714-21 (Continued)	L M S	a) Channel 7 relay "Norm" contacts fail open.	a) Loss of Battery Charger No. 2.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 2.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 2.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 2 Charger Switch.	b) Execute CRDU Command S26 "Charger 2 By-pass".	b) IIIb	
		a) Channel 7 relay "Norm" coil fails open.	a) Loss of Battery Charger No.2.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 2.	a) T/M data will indicate that DCS Channel 7 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 2 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S26 "Charger 2 By-pass".	b) IIIb	
		a) Channel 7 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 2.	a) Amp-Hour Meter will indicate output from Battery Charger 2.	a) T/M data will indicate that DCS Channel 7 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, Function required only in event of prior failure.	b) Select the "By-pass" position of the No. 2 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S26 "Charger 2 By-pass".	b) N/A (Multiple failures required.)	
		Channel 7 relay "Cutoff" contacts are not used.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-857114-21 (Continued)	L M S	a) Channel 2 relay "On" contacts fail open.	a) Loss of capability to repeat dump recorded Prime T/M Data on Recorder 1 for time period prior to dump.	a) None	a) Data dump of recorded Prime T/M Data on Recorder 1 for time period prior to dump cannot be repeated.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
		a) Channel 2 relay "Off" coil fails open.	a) Complete loss of Recorder 1 recorded Prime T/M Data.	a) None	a) T/M data will indicate that DCS Channel 2 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) Real time Prime T/M Data is sufficient for mission success.	b) None	b) Attempt switching via alternate DCS Receiver Decoder.	b) IIIa	
		a) Channel 2 relay "On" coil fails open.	a) Loss of capability to repeat dump recorded Prime T/M Data on Recorder 1 for time period prior to dump.	a) None	a) T/M data will indicate that DCS Channel 2 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) Real time Prime T/M Data is sufficient for mission success.	b) None	b) Attempt switching via alternate DCS Receiver Decoder.	b) N/A (Multiple failures required)	
		Channel 2 relay "Off" contacts are not used.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-85714-21 (Continued)	L M S	a) Channel 4 relay "On" or "Off" contacts fail open	a) The following dock and running lights cannot be turned on or off via DCS command: 1. The white and the amber AM Dock Lights 2. Two lights on each of the two Discone Antennas 3. The white and the amber MDA Running Lights.	a) Crew observes that half of the AM and MDA dock and running lights are not on or do not turn off after executed DCS command.	a) None	a) N/A	
		b) Insulating film on contacts due to contamination.	b) Determination of cluster orientation may delay docking. Nonetheless, docking can be completed with the remaining operational lights.	b) Proceed with mission utilizing remaining lights. Determine cluster attitude at close range using illumination provided by operating lights. If the AM is occupied during the rendezvous and docking the operation of the lights can be restored by placing the "Docking" switch in the "On" position. Subsequent to docking, the crew can turn the lights off by placing the "Docking" switch in the "Off" position.	b) None	b) IIIa	
		a) Channel 4 relay "On" coil or "Off" coil fails open.	a) The following dock and running lights cannot be turned on or off via DCS command: 1. The white and the amber AM Dock Lights 2. Two lights on each of the two Discone Antennas 3. The white and the amber MDA Running Lights.	a) Crew observes that half of the AM and MDA dock and running lights are not on or do not turn off after executed DCS command.	a) T/M data will indicate that DCS Channel 4 relay didnot switch	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) Determination of cluster orientation may delay docking. Nonetheless, docking can be completed with the remaining operational lights.	b) Proceed with mission utilizing remaining lights. Determine cluster attitude at close range using illumination provided by operating lights. If the AM is occupied during the rendezvous and docking the operation of the lights can be restored by placing the "Docking" switch in the "On" position. Subsequent to docking, the crew can turn the lights off by placing the "Docking" switch in the "Off position.	b) None	b) IIIa	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 1 52-85714-21 (Continued)	L M S	a) Channel 6 relay "off" contacts fail open.	a) Loss of Ground capability to remove power from T/M transmitter and PCM Converter.	a) Voice Record Light will not come on when attempting to record voice data.	a) At next data dump, data received will indicate that the recorder was not turned off.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Power cannot be removed from T/M transmitter during storage.	b) Inform Ground of discrepancy. Manually control data dumping if requested by Ground.	b) Request crew to manually control data dumping. Power down PCM Converter via CRDU PCM Bus Select commands S274 and S275. Configure transmitter so that the 2 watt transmitter is powered.	b) IIIb	
		a) Channel 6 relay "off" coil fails open.	a) Loss of Ground capability to remove power from T/M transmitter and PCM Converter.	a) Voice Record Light will not come on when attempting to record voice data.	a) T/M data will indicate that DCS Channel 6 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Power cannot be removed from T/M transmitter during storage.	b) Inform Ground of discrepancy. Manually control data dumping if requested by Ground.	b) Request crew to manually control data dumping. Power down PCM Converter via CRDU PCM Bus Select commands S274 and S275. Configure transmitter so that the 2 watt transmitter is powered.	b) IIIb	
		a) Channel 6 relay "on" contacts fail open.	a) Loss of Ground capability to dump DATA (Subframe 1) recorder via DCS Channel 6.	a) None	a) No DATA received and T/M transmitter is on after executing command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundant methods of dumping DATA.	b) None	b) Obtain DATA via DATA and Voice Dump command, DCS Channel 16.	b) IIIb	
		a) Channel 6 relay "on" coil fails open.	a) Loss of Ground capability to dump DATA (Subframe 1) recorder via DCS Channel 6.	a) None	a) T/M data will indicate that DCS Channel 6 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundant methods of dumping DATA.	b) None	b) Obtain DATA via DATA and Voice Dump command, DCS Channel 16.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (DCS Module contains 8 relays which are controlled by DCS Receiver Decoder to provide real time contact closures.)	L M S	a) Channel 9 relay "Norm" contacts fail open.	a) Loss of Battery Charger No. 5.	a) Amp Hour Meter will indicate absence of output from Battery Charger No. 5.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 5.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 5 Charger Switch.	b) Execute CRDU Command S40 "Charger 5 By-pass".	b) IIIb	
2.2.26		a) Channel relay "Norm" coil fails open.	a) Loss of Battery Charger No. 5.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 5.	a) T/M data will indicate that DCS Channel 9 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 or 8 battery chargers are required.	b) Select the "By-pass" position of the No. 5 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S40 "Charger 5 By-pass".	b) IIIb	
		a) Channel 9 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 5.	a) Amp-Hour Meter will indicate output from Battery Charger No.5	a) T/M data will indicate that DCS Channel 9 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - Function required only in event of prior failure.	b) Select the "By-pass" position of the No. 5 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S40 "Charger 5 By-pass".	b) N/A (Multiple failures required.)	
		Channel 9 relay "Cutoff" contacts are not used.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DGS Module 2 52-85714-21 (Continued)	L M S	a) Channel 13 relay "On" contacts fail open.	a) Loss of Ground capability to turn on the Primary DCS Receiver Decoder via the Secondary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Primary DCS Receiver Decoder is not powered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) Select the "PRI" position of the Command System Switch if requested by Ground.	b) Request crew to select the "PRI" position of the Command System Switch, or allow the Electronic Timer TR Register to time out and turn on the Primary DCS Receiver Decoder.	b) N/A (Multiple failures required.)	
		a) Channel 13 relay "On" coil fails open.	a) Loss of Ground capability to turn on the Primary DCS Receiver Decoder via the Secondary DCS Receiver Decoder.	a) None	a) T/M Data will indicate that DCS Channel 13 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - Function required only in event of prior failure.	b) Select the "PRI" position of the Command System Switch if requested by Ground.	b) Request crew to select the "PRI" position of the Command System Switch, or allow the Electronic Timer TR Register to time out and turn on the Primary DCS Receiver Decoder.	b) N/A (Multiple failures required.)	
		a) Channel 13 relay "Off" contacts fail open.	a) Loss of Ground capability to turn off the Primary DCS Receiver Decoder via the Secondary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Primary DCS Receiver Decoder is powered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, due to adequate power provisions.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch.	b) IIIb	
		a) Channel 13 relay "Off" coil fails open.	a) Loss of Ground capability to turn off the Primary DCS Receiver Decoder via the Secondary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Primary DCS Receiver Decoder is powered.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to adequate power provisions.	b) Select the "SEC" position of the Command System Switch if requested by Ground	b) Request crew to select the "SEC" position of the Command System Switch.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (Continued)	L M S	a) Channel 14 relay "Norm" contacts fail open.	a) Loss of Battery Charger No. 6.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 6.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 6.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 6 Charger Switch.	b) Execute CRDU Command S54 "Charger 6 By-pass".	b) IIIb	
		a) Channel 14 relay "Norm" coil fails open.	a) Loss of Battery Charger No. 6	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 6.	a) T/M data will indicate that DCS Channel 14 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 6 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S54 "Charger 6 By-pass".	b) IIIb	
		a) Channel 14 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 6.	a) Amp-Hour Meter will indicate output from Battery Charger No. 6.	a) T/M data will indicate that DCS Channel 14 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 14 relay "Cutoff" contacts are not used.	b) None - Function required only in event of prior failure.	b) Select the "By-pass" position of the No. 6 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S54 "Charger 6 By-pass".	b) N/A (Multiple failures Required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (Continued)	L M S	a) Channel 10 relay "off" contacts fail open.	a) Loss of Ground capability to remove power from T/M transmitter and Exp. Recorder Converter via DCS Channel 10.	a) Exp. 1 Record Light does not come on when attempting to record data.	a) T/M transmitter does not turn off after executing command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Power cannot be removed from T/M transmitter during storage.	b) Check light via Lighting Status Switch. Inform Ground of discrepancy.	b) Power down PCM Converter via CRDU PCM Bus Select commands S274 and S275. Configure transmitter configuration such that the 2 Watt transmitter is power continuously.	b) IIIb	
		a) Channel 10 relay "off" coil fails open.	a) Loss of Ground capability to remove power from T/M transmitter and Exp. Recorder Converter via DCS Channel 10.	a) Exp. 1 Record Light does not come on when attempting to record data.	a) T/M data will indicate that DCS Channel 10 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Power cannot be removed from T/M transmitter during storage.	a) Check light via Lighting Status Switch. Inform Ground of discrepancy.	b) Power down PCM Converter via CRDU PCM Bus Select commands S274 and S275. Configure transmitter configuration such that the 2 Watt transmitter is power continuously.	b) IIIb	
		a) Channel 10 relay "on" contacts fail open.	a) Loss of Ground capability to dump Exp. 1 and Exp. Voice Data.	a) None	a) Data is not received after executing command.	a) N/A	----------
		b) Insulating film on contact due to contamination.	b) None, crew can manually dump the data.	b) Manually dump data upon Ground request.	b) Request crew to manually dump data.	b) IIIb	
		a) Channel 10 relay "on" coil fails open.	a) Loss of Ground capability to dump Exp. 1 and Exp. Voice Data.	a) None	a) T/M data will indicate that DCS Channel 10 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, Crew can manually dump the data.	b) Manually dump data upon Ground request.	b) Request crew to manually dump data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (Continued)	L M S	a) Channel 11 relay "off" contacts fail open.	a) Loss of Ground capability to remove power from PCM Bus Converter and real time T/M transmitter via DCS Channel 11.	a) None	a) Real time T/M transmitter remains on after executing command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Real time T/M transmitter cannot be turned off during storage.	b) Manually control T/M transmitter upon Ground request.	b) Power down PCM Bus Converter via CRDU PCM Bus Select commands S274 and S275. Configure T/M transmitter such that the 2 Watt transmitter is powered continuously.	b) IIIb	
		a) Channel 11 relay "off" coil fails open.	a) Loss of Ground capability to remove power from PCM Bus Converter and real time T/M transmitter via DCS Channel 11.	a) None	a) T/M data will indicate that DCS Channel 11 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Real time T/M transmitter cannot be turned off during storage.	b) Manually control T/M transmitter upon Ground request.	b) Power down PCM Bus Converter via CRDU PCM Bus Select commands S274 and S275. Configure T/M transmitter such that the 2 Watt transmitter is powered continuously.	b) IIIb	
		a) Channel 11 relay "on" contacts fail open.	a) Loss of Ground capability to turn on the real time T/M transmitter via DCS Channel 11.	a) None	a) No real-time T/M data after executing command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by CRDU command S268.	b) None	b) Perform function via CRDU Back up real time T/M command S268.	b) IIIb	
		a) Channel 11 relay "on" coil fails open.	a) Loss of Ground capability to turn on the real time T/M transmitter via DCS Channel 11.	a) None	a) T/M data will indicate that DCS Channel 11 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by CRDU command S268.	b) None	b) Perform function via CRDU Back up real time T/M command S268.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (Continued)	L M S	a) Channel 12 relay "off" contacts fail open.	a) Loss of Ground capability to remove power from Exp. Recorder Converter and T/M transmitter via DCS Channel 12.	a) Exp. 2 Record Light does not turn on when attempting to record data.	a) T/M transmitter remains on after executing command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) T/M transmitter cannot be turned off during storage.	b) Check Record Light via Lighting Status Switch. Inform Ground of discrepancy.	b) Power down Exp. Recorder Converter via CRDU PCM Bus Select commands S274 and S275. Configure T/M transmitters such that the 2 Watt transmitter is powered continuously.	b) IIIb	
		a) Channel 12 relay "off" coil fails open.	a) Loss of Ground capability to remove power from Exp. Recorder Converter and T/M transmitter via DCS Channel 12.	a) Exp. 2 Record Light does not turn on when attempting to record data.	a) T/M data will indicate that DCS Channel 12 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) T/M transmitter cannot be turned off during storage.	b) Check Record Light via Lighting Status Switch. Inform Ground of discrepancy.	b) Power down Exp. Recorder Converter via CRDU PCM Bus Select commands S274 and S275. Configure T/M transmitters such that the 2 Watt transmitter is powered continuously.	b) IIIb	
		a) Channel 12 relay "on" contacts fail open.	a) Loss of Ground capability to dump Exp. 2 data.	a) None	a) No Exp. 2 T/M data after executing command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Loss of recorded subframe 4 data during storage.	b) Manually dump Exp. 2 data upon Ground request.	b) Request crew to manually dump Exp. 2 data.	b) IIIb	
		a) Channel 12 relay "on" coil fails open.	a) Loss of Ground capability to dump Exp. 2 data.	a) None	a) T/M data will indicate that DCS Channel 12 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of recorded subframe 4 data during storage.	b) Manually dump Exp. 2 data upon Ground request.	b) Request crew to manually dump Exp. 2 data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (Continued)	L M S	a) Channel 16 relay "off" contacts fail open.	a) Loss of Ground capability to remove power from Exp. Recorder Converter and two T/M transmitters via DCS Channel 16.	a) Record Voice Light does not come on when attempting to record voice data.	a) Two T/M transmitters remain powered after executing the command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Two T/M transmitters cannot be turned off during storage.	b) Inform Ground of discrepancy.	b) During storage, configure transmitters such that the 2 Watt transmitter and one 10 Watt transmitter are powered continuously.	b) IIIb	
		a) Channel 16 relay "off" coil fails open.	a) Loss of Ground capability to remove power from Exp. Recorder Converter and two T/M transmitters via DCS Channel 16.	a) Record Voice Light does not come on when attempting to record voice data.	a) T/M data will indicate that DCS Channel 16 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Two T/M transmitters cannot be turned off during storage.	b) Inform Ground of discrepancy.	b) During storage, configure transmitters such that the 2 Watt transmitter and one 10 Watt transmitter are powered continuously.	b) IIIb	
		a) Channel 16 relay "on" contacts fail open.	a) Loss of Ground capability to dump Data and Voice.	a) None	a) No recorded T/M Data and Voice when command is executed.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, crew can manually dump Data and Voice and Ground can dump Data during storage.	b) Manually dump Data and Voice upon Ground request.	b) Request crew to manually dump recorded Data and Voice. During storage dump recorded Data via DCS Channel 6.	b) IIIb	
		a) Channel 16 relay "on" coil fails open.	a) Loss of Ground capability to dump Data and Voice.	a) None	a) T/M data will indicate that DCS Channel 16 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, crew can manually dump Data and Voice and Ground can dump Data during storage.	b) Manually dump Data and Voice upon Ground request.	b) Request crew to manually dump recorded Data and Voice. During storage dump recorded Data via DCS Channel 6.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 2 52-85714-21 (Continued)	L M S	a) Channel 15 relay "off" contacts fail open.	a) Partial loss of recorded data until T/M transmitter warm up.	a) None	a) Recorder goes into "Record" mode upon DATA Dump Enable On DCS Channel 6, or Data and Voice Enable On, DCS Channel 16, command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to work around procedures.	b) None	b) Run recorder in "Record" mode sufficient amount of time so that no data is lost.	b) IIIb	
		a) Channel 15 relay "off" coil fails open.	a) Partial loss of recorded data until T/M transmitter warm up.	a) None	a) T/M data will indicate that DCS Channel 15 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to work around procedures.	b) None	b) Run recorder in "Record" mode sufficient amount of time so that no data is lost.	b) IIIb	
		a) Channel 15 relay "Dump" contacts fail open.	a) Loss of Ground capability to dump Data Recorder.	a) None	a) No T/M data from Data Recorder after exeuting command	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Loss of recorded Subframe 1 data during storage.	b) Manually dump Data Recorder upon Ground request.	b) Request crew to manually dump Data Recorder data.	b) IIIb	
		a) Channel 15 relay "Dump" coil fails open.	a) Loss of Ground capability to dump Data Recorder.	a) None	a) T/M data will indicate that DCS Channel 15 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of recorded Subframe 1 data during storage.	b) Manually dump Data Recorder upon Ground request.	b) Request crew to manually dump Data Recorder data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 3 52-85714-21 (DCS Module contains 8 relays which are controlled by DCS Receiver Decoder to provide real time contact closures) 2.2.27	L M S	a) Channel 17 relay "Norm" contacts fail open.	a) Loss of Battery Charger No.3.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 3.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 3.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 3 Charger Switch.	b) Execute CRDU Command S78 "Charger 3 By-pass".	b) IIIb	
		a) Channel 17 relay "Norm" coil fails open.	a) Loss of Battery Charger No.3.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 3.	a) T/M data will indicate that DCS Channel 17 relay did not switch.	a) N/A	
		b) Defective Terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 3 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S78 "Charger 3 By-pass".	b) IIIb	
		a) Channel 17 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 3.	a) Amp-Hour Meter will indicate output from Battery Charger No.3.	a) T/M data will indicate that DCS Channel 17 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 17 relay "Cutoff" contacts are not used.	b) None - Function required only in event of prior failure.	b) Select the "By-pass" position of the No. 3 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S78 "Charger 3 By-pass".	b) N/A (Multiple failures required.)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 3 52-85714-21 (Continued)	L M S	a) Channel 18 relay "Norm" contacts fail open.	a) Loss of Battery Charger No.4.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 4.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 4.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 4 Charger Switch.	b) Execute CRDU Command S88 "Charger 4 By-pass".	b) IIIb	
		a) Channel 18 relay "Norm" coil fails open.	a) Loss of Battery Charger No.4.	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 4.	a) T/M data will indicate that DCS Channel 18 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 4 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S88 "Charger 4 By-pass".	b) IIIb	
		a) Channel 18 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 4.	a) Amp-Hour Meter will indicate output from Battery Charger No.4.	a) T/M data will indicate that DCS Channel 18 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, Function required only in event of prior failure.	b) Select the "By-Pass" position of the No. 4 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S88 "Charger 4 By-pass".	b) N/A (Multiple failures required)	
		Channel 18 relay "Cutoff" contacts are not used.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 3 52-85714-21 (Continued)	L M S	a) Channel 19 relay "On" contacts fail open.	a) Loss of capability to repeat dump of recorded T/M data on Experiment 2 Recorder for time period prior to dump.	a) None	a) Data dump of recorded T/M data on Experiment 2 Recorder for time period prior to dump cannot be repeated.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) None	b) none	b) N/A (Multiple failures required)	
		a) Channel 19 relay "On" coil fails open.	a) Loss of capability to repeat dump of recorded T/M data on Experiment 2 Recorder for time period prior to dump.	a) None	a) T/M data will indicate that DCS Channel 19 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - Function required only in event of prior failure.	b) None	b) Attempt switching via alternate DCS Reciever Decoder.	b) N/A (Multiple failures required)	
		a) Channel 19 relay "Off" coil fails open.	a) Complete loss of recorded T/M data on Experiment 2 Recorder.	a) None	a) T/M data will indicate that DCS Channel 19 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 19 relay "OFF" contacts are not used.	b) None - T/M data from Experiment 2 Recorder is not required for mission success.	b) None	b) Attempt switching via alternate DCS Receiver Decoder.	b) IIIa	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (DCS Module contains 8 relays which are controlled by DCS Receiver Decoder to provide real time contact closures.) 2.2.28	L M S	a) Channel 25 relay "On" contacts fail open.	a) Loss of Command capability to power the Interface Electronics Unit.	a) None	a) T/M data will indicate that the Interface Electronics Unit is not powered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, crew can turn on the Interface Electronics Unit during Manned phases.	b) Select the "On" position of the Teleprint Switch if requested by Ground.	b) Request the crew to select the "On" position of the Teleprint Switch.	b) IIIb	
		a) Channel 25 relay "On" coil fails open.	a) Loss of Command capability to power the Interface Electronics Unit.	a) None	a) T/M data will indicate that DCS Channel 25 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, crew can turn on the Interface Electronics Unit during Manned phases.	b) Select the "On" position of the Teleprint Switch if requested by Ground.	b) Attempt switching function via alternate DCS Receiver Decoder. Request crew to select the "On" position of the Teleprint Switch.	b) IIIb	
		a) Channel 25 relay "Off" coil fails open.	a) Loss of Ground capability to turn off the Interface Electronic Unit.	a) None	a) T/M data will indicate that DCS Channel 25 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 25 "Off" contacts are not used.	b) None, due to adequate power provisions.	b) Select the "Off" position of the Teleprint Switch prior to leaving.	b) Attempt switching function via alternate DCS Receiver Decoder. Request crew to select the "Off" position of the Teleprint Switch prior to leaving.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (Continued)	L M S	a) Channel 26 relay "On" contacts fail open.	a) Loss of capability to repeat dump of recorded T/M data on Experiment 1 Recorder for time perior prior to dump.	a) None	a) Data dump of recorded T/M data on Experiment 1 Recorder for time period prior to dump cannot be repeated.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
		a) Channel 26 relay "On" coil fails open	a) Loss of capability to repeat dump of recorded T/M data on Experiment 1 Recorder for time period prior to dump.	a) None	a) T/M data will indicate that DCS Channel 26 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - Function required only in event of prior failure.	b) None	b) Attempt switching via alternate DCS Receiver Decoder.	b) N/A (Multiple failure required)	
		a) Channel 26 relay "Off" coil fails open.	a) Complete loss of recorded T/M data on Experiment 1 Recorder.	a) None	a) T/M data will indicate that DCS Channel 26 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 126 relay "OFF" contacts are not used.	b) None - T/M data from Experiment 1 Recorder is not required for mission success.	b) None	b) Attempt switching via alternate DCS Receiver Decoder.	b) IIIa	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (Continued)	L M S	a) Channel 27 relay "On" contacts fail open.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder is not powdered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR Register to time out and turn on the Secondary DCS Receiver Decoder.	b) N/A (Multiple failures required)	
		a) Channel 27 relay "On" coil fails open.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that DCS Channel 27 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None - Function required only in event of prior failures.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR Register to time out and turn on the Secondary DCS Receiver Decoder.	b) N/A (Multiple failures required)	
		a) Channel 27 relay "Off" contacts fail open.	a) Loss of capability to reset the DCS Secondary Power Relay.	a) None	a) None	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None - Function required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required.)	
		a) Channel 27 relay "Off" coil fails open.	a) Loss of Ground capability to turn off the Secondary DCS Receiver Decoder via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that DCS Channel 27 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to adequate power provisions.	b) Select the "PRI" position of the Command System Switch if requested by Ground.	b) Request crew to select the "PRI" position of the Command System Switch.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (Continued)	L M S	a) Channel 28 relay "On" or "Off" contacts fail open.	a) The following dock and running lights cannot be turned on or off via DCS Command: 1. The red and the green AM Docking Lights. 2. Two lights on each of the two Discone Antennas. 3. The red and the green MDA Running Lights.	a) Crew observes that half of the AM and MDA dock and running lights are not on.	a) None	a) N/A	
		b) Insulating film on contacts due to contamination.	b) Determination of cluster orientation may delay docking. Nonetheless, docking can be completed with the remaining operational lights.	b) Proceed with mission utilizing remaining lights. Determine cluster attitude at close range using illumination provided by operating lights. If the AM is occupied during the rendezvous and docking, the operation of the lights can be restored by placing the "docking switch in the "On" position. Subsequent to docking, the crew can turn the lights off by placing the "Docking" switch in the "Off" position.	b) None	b) IIIa	
		a) Channel 28 relay "On" or "Off" coil fails open.	a) The following dock and running lights cannot be turned on or off via DCS command: 1. The red and the green AM Docking Lights. 2. Two lights on each of the two Discone Antennas. 3. The red and the green MDA Running Lights.	a) Crew observes that half of the AM and MDA dock and running lights are not on.	a) T/M data will indicate that DCS Channel 28 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) Determination of cluster orientation may delay docking. Nonetheless, docking can be completed with the remaining operational lights.	b) Proceed with mission utilizing remaining lights. Determine cluster attitude at close range using illumination provided by operating lights. If the AM is occupied during the rendezvous and docking, the operation of the lights can be restored by placing the "docking switch in the "On" position. Subsequent to docking, the crew can turn the lights off by placing the "Docking" switch in the "Off" position.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (Continued)	L M S	a) Channel 29 relay "Norm" contacts fail open.	a) Loss of Battery Charger No. 7	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 7.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 7.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 7 Charger Switch.	b) Execute CRDU Command S104 "Charger 7 By-pass".	b) IIIb	
		a) Channel 29 relay "Norm" coil fails open.	a) Loss of Battery Charger No. 7	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 7.	a) T/M data will indicate that DCS Channel 29 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 7 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S104 "Charger 7 By-pass".	b) IIIb	
		a) Channel 29 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 7.	a) Amp-Hour Meter will indicate output from Battery Charger No. 7	a) T/M data will indicate that DCS Channel 29 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 29 relay "Cutoff" contacts are not used.	b) None, Function required only in event of prior failure,	b) Select the "By-pass" position of the No. 7 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S104 "Charger 7 By-pass".	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION f) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21	L M S	a) Channel 30 relay "Norm" contacts fail open.	a) Loss of Battery Charger No. 8	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 8.	a) T/M data of the Amp-Hour Meter will indicate the absence of output from Battery Charger No. 8.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 8 Charger Switch.	b) Execute CRDU Command S120 "Charger 8 By-pass".	b) IIIb	
		a) Channel 30 relay "Norm" coil fails open.	a) Loss of Battery Charger No.8	a) Amp-Hour Meter will indicate absence of output from Battery Charger No. 8.	a) T/M data will indicate that DCS channel 30 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, only 6 of 8 battery chargers are required.	b) Select the "By-pass" position of the No. 8 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S120 "Charger 8 By-pass".	b) IIIb	
		a) Channel 30 relay "Cutoff" coil fails open.	a) Loss of Ground capability to disable Battery Charger No. 8.	a) Amp-Hour Meter will indicate output from Battery Charger No. 8.	a) T/M data will indicate that DCS channel 30 relay did not switch.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Channel 30 relay "Cutoff" contacts are not used.	b) None, Function required only in event of prior failure.	b) Select the "By-pass" position of the No. 8 Charger Switch.	b) Attempt switching via alternate DCS Receiver Decoder. Execute CRDU Command S120 "Charger 8 By-pass".	b) N/A (Multiple failures required.)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (Continued)	L M S	a) Channel 31 relay "off" contacts fail open.	a) Partial loss of Exp. 1 recorded data until T/M transmitter warms up.	a) None	a) Recorder goes into "Record" mode upon Exp. 1 and Exp. Voice Dump Enable On DCS Channel 10 Command.-	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to work around procedures.	b) None	b) Use Data and Voice Dump Enable On command to warm up T/M transmitter prior to Exp. 1 and Exp. Voice Dump Enable On command.	b) IIIb	
		a) Channel 31 relay "off" coil fails open.	a) Partial loss of Exp. 1 recorded data until T/M transmitter warms up.	a) None	a) T/M data will indicate that DCS Channel 31 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to work around procedures.	b) None	b) Use Data and Voice Dump Enable On command to warm up T/M transmitter prior to Exp. 1 and Exp. Voice Dump Enable On Command.	b) IIIb	
		a) Channel 31 relay "dump" contacts fail open.	a) Loss of Ground capability to dump Exp. 1 Recorder.	a) None	a) No recorded T/M data from Exp. 1 Recorder when command is executed.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, crew can manually dump Exp. 1 Recorder.	b) Manually dump Exp. 1 Recorder upon Ground request.	b) Request crew to manually dump Exp. 1 Recorder.	b) IIIb	
		a) Channel 31 relay "dump" coil fails open.	a) Loss of Ground capability to dump Exp. 1 Recorder.	a) None	a) T/M data will indicate that DCS Channel 31 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, crew can manually dump Exp. 1 Recorder.	b) Manually dump Exp. 1 Recorder upon Ground request.	b) Request crew to manually dump Exp. 1 Recorder.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
DCS Module 4 52-85714-21 (Continued)	L M S	a) Channel 32 relay "off" contacts fail open.	a) Partial loss of T/M data from Exp. 2 Recorder until T/M transmitter warmup.	a) None	a) Exp. 2 Recorder goes into "Record" mode upon Exp. 2/Data 2 Dump Enable On DCS Channel 12 command.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to work around procedures.	b) None	b) Run-Exp. 2 Recorder in "Record" mode until sufficient amount of time so that data is not lost.	b) IIIb	
		a) Channel 32 relay "off" coil fails open.	a) Partial loss of T/M data from Exp. 2 Recorder until T/M transmitter warmup.	a) None	a) T/M data will indicate that DCS Channel 32 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to work around procedures.	b) None	b) Run Exp. 2 Recorder in "Record" mode until sufficient amount of time so that data is not lost.	b) IIIb	
		a) Channel 32 relay "dump" contacts fail open.	a) Loss of Ground capability to dump Exp. 2 Recorder.	a) None	a) No recorded T/M data from Exp. 2 Recorder when command is executed.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) Loss of recorded Subframe 4 data during storage.	b) Manually dump Exp. 2 Recorder upon Ground request.	b) Request crew to manually dump Exp. 2 Recorder data.	b) IIIb	
		a) Channel 32 relay "dump" coil fails open.	a) Loss of Ground capability to dump Exp. 2 Recorder.	a) None	a) T/M data will indicate that DCS Channel 32 relay did not switch.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of recorded Subframe 4 data during storage.	b) Manually dump Exp. 2 Recorder upon Ground request.	b) Request crew to manually dump Exp. 2 Recorder data.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (The CRDU provides additional command functions by converting the existing stored program (computer update) capability of the DCS to real time (relay/set/reset) commands and provides an output to the TM system indicating the specific relay command processed.) 2.2.29	L M S	a) 28V output from channel S223 when any one of the commands S192 - S239 is addressed.	a) Loss of command capability to select the Discone Ant. 2 while A (B) side of the CRDU is powered.	a) None	a) T/M data will indicate that Discone Ant. Coax Switch did not switch.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B (A) side of the CRDU, power down side A (B) and perform switching function.	b) IIIb	
		a) 28V output from channel S222 when any one of the commands S192 - S239 is addressed.	a) Loss of command capability to select the Discone 1/Stub Antennas while A (B) side of the CRDU is powered.	a) None	a) T/M data will indicate that Discone Ant. Coax Switch did not switch.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B (A) side of the CRDU, power down side A (B) and perform switching function.	b) IIIb	
		a) 28V output from channel S225 when any one of the commands S192 - S239 is addressed.	a) Loss of command capability to select the Discone Ant. 1 while A (B) side of the CRDU is powered.	a) None	a) T/M data will indicate that Launch/Orbit Coax Switch did not switch.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B (A) side of the CRDU, power down side A (B) and perform switching function.	b) IIIb	
		a) 28V output from channel S224 when any one of the commands S192 - S239 is addressed.	a) Loss of command capability to select the Stub Antenna while A (B) side of the CRDU is powered.	a) None	a) Loss of T/M data until Discone Antennas are deployed.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B (A) side of the CRDU, power down side A (B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S342 when any one of commands S384 - S479 is addressed.	a) Loss of Electronic Timer capability to turn on the Primary DCS while A(B) side of the CRDU is powered.	a) None	a) Electronic Timer TR-30 function cannot turn on the Primary DCS.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Perform switching function via Secondary DCS	b) IIIb	
		a) 28V output from channel S280 when any one of commands S240- S287 is addressed.	a) Loss of Electronic Timer capability to turn on the Secondary DCS while A(B) side of the CRDU is powered.	a) None	a) Electronic Timer TR-30 function cannot turn on the Secondary DCS.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Perform switching function via Primary DCS.	b) IIIb	
		a) 28V output from channel S335 when any of commands S284 - S479 is addressed.	a) Loss of capability to select the Secondary Electronic Timer via CRDU S334.	a) None	a) T/M data will indicate that the Secondary Electronic Timer has not been selected.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by CRDU S252.	b) None	b) Perform switching function via CRDU S252.	b) IIIb	
		a) 28V output from channel S334 when any one of the commands S234 - S479 is addressed.	a) Loss of capability to select the Primary Electronic Timer while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the Primary Electronic Timer has not been selected.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S253 when any one of commands S240 - S287 is addressed.	a) Loss of capability to select the Secondary Electronic Timer via CRDU S252.	a) None	a) T/M data will indicate that the Secondary Electronic Timer has not been selected.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by CRDU S334.	b) None	b) Perform switching function via CRDU S334.	b) IIIb	
		a) 28V output from channel S252 when any one of commands S240 - S287 is addressed.	a) Loss of capability to select the Primary Electronic Timer while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the Primary Electronic Timer has not been selected.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down the A(B) side, and perform switching function.	b) IIIb	
		a) 28V output from channel S295 when any one of commands S288 - S335 is addressed.	a) Loss of Ground capability to reset the AM Time Reference system to Greenwich Mean Time while A(B) side of the CRDU is powered.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Inform ground of discrepancy.	b) Select the B(A) side of the CRDU, power down the A(B) side, and perform switching function.	b) IIIb	
		a) 28V output from channel S294 when any one of commands S288 - S335 is addressed.	a) Loss of elapsed time data on the AM Time Reference System while A(B) side of the CRDU is powered.	a) Erroneous elapsed time displayed on the Digital Display Units.	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Inform ground of discrepancy.	b) Select the B(A) side of the CRDU, power down the A(B) side, and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S201 when any one of commands S192 - S239 is addressed.	a) Loss of capability to power the VHF Ranging System via CRDU S200.	a) None	a) T/M data will indicate that the VHF Ranging System is not powered.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by CRDU S296.	b) None	b) Perform switching function via CRDU S296.	b) IIIb	
		a) 28V output from channel S200 when any one of commands S192 - S239 is addressed.	a) Loss of capability to remove power from the VHF Ranging System while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that VHF Ranging System is powered.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function.	b) IIIb	
		a) 28V output from channel S297 when any one of commands S288 - S335 is addressed.	a) Loss of capability to power the VHF Ranging System via CRDU S296.	a) None	a) T/M data will indicate that the VHF Ranging System is not powered.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by CRDU S200.	b) None	b) Perform switch function via CRDU S200.	b) IIIb	
		a) 28V output from channel S296 when any one of commands S288 - S335 is addressed.	a) Loss of capability to remove power from the VHF Ranging System while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the VHF Ranging System is powered.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function.	b) IIIb	
		a) 28V output from channel S177 when any one of commands S144 - S191 is addressed.	a) Loss of capability to generate a Crew Alert via CRDU S176 while A(B) side of the CRDU is powered.	a) None	a) Crew does not respond to Crew Alert generated via CRDU S176.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by CRDU S240.	b) None	b) Generate Crew Alert via CRDU S240.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S176 when any one of commands S144 - S191 is addressed.	a) Loss of capability to remove Crew Alert via CRDU S177 while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that there is a "Warning" on the C&W System after attempting to remove the Crew Alert via S177.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to crew capability to inhibit Crew Alert #1.	b) Place C&W System Crew Alert #1 Inhibit Switch in the "Inhibit" position.	b) Request crew to inhibit Crew Alert 1.	b) IIIb	
		a) 28V output from channel S241 when any one of commands S240 - S287 is addressed.	a) Loss of capability to generate a Crew Alert via CRDU S240 while A(B) side of the CRDU is powered.	a) None	a) Crew does not respond to Crew Alert generated via CRDU S240.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by CRDU S176.	b) None	b) Generate Crew Alert via CRDU S176.	b) IIIb	
		a) 28V output from channel S240 when any one of commands S240 - S287 is addressed.	a) Loss of capability to remove Crew Alert via CRDU S241 while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that there is a "Warning" on the C&W System after attempting to remove the Crew Alert via S241.		
		b) Mechanical or thermal stress	b) None, due to crew capability to inhibit Crew Alert #2.	b) Place	b) Request crew to inhibit Crew Alert 2.		
		a) 28V output from channel S195 when any one of commands S192 - S239 is addressed.	a) Loss of capability to select the Orbit 10 watt T/M transmitter while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the Transmitter Coax Switch is in the "Launch" position.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S194 when any one of commands S192-- S239 is addressed.	a) Loss of capability to select the Launch 2 watt T/M transmitter	a) None	a) Loss of T/M data until 10 watt transmitters are used during launch phase.	a) N/A	
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S269 when any one of commands S240 - S287 is addressed.	a) Loss of recorded Voice and Experiment Voice T/M data while A(B) side of the CRDU is powered.	a) None	a) Loss of recorded Voice and Experiment Voice T/M data.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S268 when any one of commands S240 - S287 is addressed.	a) Continuous transmission of T/M data from Transmitter B.	a) None	a) Continuous transmission of T/M data from Transmission B.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S333 when any one of commands S288 - S335 is addressed.	a) Loss of capability to select the Secondary Electronics of the Instrumentation System while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failures.	b) None	b) None	b) N/A (Multiple failures required)	
		a) 28V output from channel S332 when any one of commands S288 - S335 is addressed.	a) Loss of capability to select the Primary Electronics of the Instrumentation System while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failures.	b) None	b) None	b) N/A (Multiple failures required)	
		a) 28V output from channel S452 or S159 when any one of commands S384 - S479 (S144 - S191) is addressed.	a) Loss of capability to interchange the T/M data being transmitted from T/M Transmitters C and B while A(B) side of the CRDU is powered.	a) None	a) T/M data being transmitted from Transmitter C and B will not be interchanged.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failures.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S451 or or S150 when any one of commands S384 - S479 (S144-S191) is addressed.	a) Loss of capability to interchange the T/M data being transmitted from T/M Transmitters B and C while A(B) side of the CRDU is powered.	a) None	a) T/M data being transmitted from Transmitters B and C will not be interchanged.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) N/A (Multiple failure required)	
		a) 28V output from channel S454 when any one of commands S384 - S479 is addressed.	a) Loss of capability to interchange the T/M data being transmitted from T/M Transmitter B and A while A(B) side of the CRDU is powered.	a) None	a) T/M data being transmitted from Transmitter B and A will not be interchanged.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) N/A (Multiple failures required)	
		a) 28V output from channel S453 when any one of commands S384 - S479 is addressed.	a) Loss of capability to interchange the T/M data being transmitted from T/M Transmitters A and B while A(B) side of the CRDU is powered.	a) None	a) T/M data being transmitted from Transmitter A and B will not be interchanged.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) N/A (Multiple failures required)	
		a) 28V output from channel S396, S395, S399 or S397 when any one of commands S384 - S479 is addressed.	a) Loss of Ground capability to change Instrumentation Bus A and B converter configuration while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
		a) 28V output from channel S377 when any one of commands S336 - S383 is addressed.	a) Loss of Ground capability to record Subframe 1 data while A(B) side of the CRDU is powered.	a) None	a) When CRDU S376 is executed, T/M data will indicate no tape motion.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B350005 (Continued)	L M S	a) 28V output from channel S376 when any one of commands S336 - S383 is addressed.	a) Tape recorder will be on continuously while A(B) side of the CRDU is powered.	a) None	a) When CRDU S377 is executed, T/M data will indicate that the tape recorder is still running.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S331 when any one of commands S288 - S335 is addressed.	a) Loss of Ground capability to record Subframe 4 data while A(B) side of the CRDU is powered.	a) None	a) When CRDU S330 is executed, T/M data will indicate no tape motion.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S330 when any one of commands S288 - S335 is addressed.	a) Tape recorder will be on continuously while A(B) side of the CRDU is powered.	a) None	a) When CRDU S331 is executed, T/M data will indicate that the tape recorder is still running.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S275 when any one of commands S240 - S287 is addressed.	a) Loss of capability to select Instrumentation Bus B for PCM power while A(B) side of the CRDU is powered.	a) None	a) When CRDU S274 is executed, T/M data will indicate that PCM is still powered from Instrumentation Bus A.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S274 when any one of commands S240 - S287 is addressed.	a) Loss of capability to select Instrumentation Bus A for PCM power while A(B) side of the CRDU is powered.	a) None	a) When CRDU S275 is executed, T/M data will indicate that PCM is still powered from Instrumentation Bus B.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S187 when any one of commands S140 - S191 is addressed.	a) Loss of capability to power Group 1 sensors from Instrumentation Bus B while A(B) side of the CRDU is powered.	a) None	a) When the PCM is powered from Bus B, loss of T/M data from Group I sensors.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S186 when any one of commands S144 - S191 is addressed.	a) Loss of capability to power Group I sensors from Instrumentation Bus A while A(B) side of the CRDU is powered.	a) None	a) When the PCM is powered from Bus A, loss of T/M data from Group I sensors.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S199 when any one of commands S192 - S239 is addressed.	a) Loss of capability to power Group II sensors from Instrumentation Bus B while A(B) side of the CRDU is powered.	a) None	a) When the PCM is powered from Bus B, loss of T/M data from Group II sensors.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S198 when any one of commands S191 - S239 is addressed.	a) Loss of capability to power Group II sensors from Instrumentation Bus A while A(B) side of the CRDU is powered.	a) None	a) When the PCM is powered from Bus A, loss of T/M data from Group II sensors.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S145 when any one of commands S144 - S191 is addressed.	a) Loss of Ground capability to select the Secondary Programmer while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) Function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S144 when any one of commands S144 - S191 is addressed.	a) Loss of Ground capability to select the Primary Programmer while A(B) side of the CRDU is powered	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) Function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
		a) 28V output from channel S409 when any one of commands S384 - S479 is addressed.	a) Loss of capability to power the QCM Contamination Monitor while A(B) side of the CRDU is powered.	a) None	a) T/M will indicate loss of power to QCM Contamination Monitor.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S408 when any one of commands S384 - S479 is addressed.	a) Loss of capability to remove power from the QCM Contamination Monitor while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the QCM Contamination Monitor is still powered after executing CRDU S409.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S370 (S298) when any one of commands S336 - S383 (S288 - S335) is addressed.	a) Loss of capability to retrieve data on ATM Tape Recorder No. 1 (2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM Tape Recorder No. 1(2) is locked in the record mode.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S329 (S310) when any one of commands S288 - S335 is addressed.	a) Loss of capability to record data on ATM Tape Recorder No. 1 (2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM Tape Recorder is locked in the Playback mode.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S371 (S299) when any one of commands S335) is addressed.	a) Loss of capability to record or retrieve data on ATM Tape Recorder No. 1(2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that the ATM Tape Recorder No. 1 (2) is locked in the off mode.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S359 (S351) when any one of commands S336 - S383 is addressed.	a) Loss of capability to connect ATM T/M Transmitter No. 1 to the Aft (Fwd) Antenna while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM T/M Transmitter No. 1 is connected to the Fwd (Aft) Antenna.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S375 (S374) when any one of commands S336 - S383 is addressed.	a) Loss of capability to connect ATM T/M Transmitter No. 2 to the Aft. (Fwd) Antenna while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM T/M Transmitter No. 2 is connected to the Fwd (Aft) Antenna.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S373 (S421) when any one of commands S336 - S383 (S384-S479) is addressed.	a) Loss of capability to turn on ATM Command Decoder and Rcvr No. 1(2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM Command Decoder and Rcvr No. 1(2) is not powered.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S372 (S420) when any of commands S336 - S372 (S384-S479) is addressed.	a) Loss of capability to turn off ATM Command Decoder and Rcvr. No. 1(2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM Command Decoder and Rcvr No. 1(2) is still powered.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S301 (S303) when any one of commands S288 - S335 is addressed.	a) Loss of capability to transmit real time ATM T/M data via ATM Transmitter No. 1(2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM Transmitter No. 1(2) is not transmitting real time data.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S300 (S302) when any one of commands S288 - S335 is addressed.	a) Loss of capability to transmit recorded ATM T/M data via ATM T/M Transmitter No. 1(2) while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate that ATM Transmitter No. 1(2) is not transmitting recorded data.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S305 when any one of commands S288 - S335 is addressed.	a) Loss of capability of deploying ATM SAS A and B via CRDU while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
		a) 28V output from channel S304 when any one of commands S288 - S335 is addressed.	a) Loss of capability to reset ATM SAS A and B via CRDU while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S1, (S17, S65, S87, S33, S47, S97, or S113) when any one of commends S0-S143 is addressed.	a) Loss of ground capability to connect Solar Array No. 1 (2, 3, 4, 5, 6, 7, or 8) to PCG 1 (2, 3, 4, 5, 6, 7, 8) while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Solar Array is not connected to the desired PCG.	a) N/A	----
		b) Mechanical or thermal stress.	b) None due to capability to connect Solar Array to alternate PCG.	b) None.	b) Connect an alternate Solar Array to the PCG via CRDU.	b) IIIb	
		a) 28V output from channel S0 (S16, S64, S86, S32, S46, S96, or S112) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect Solar Array No. 1 (2, 3, 4, 5, 6, 7, or 8) to PCG 2 (3, 4, 1, 6, 7, 8 or 5) while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Solar Array is not connected to the desired PCG.	a) N/A	----
		b) Mechanical or thermal stress.	b) None due to capability to connect Solar Array to alternate PCG.	b) None.	b) Connect an alternate Solar Array to the PCG via CRDU.	b) IIIb	
		a) 28V output from channel S3, S19, S67, S81, S35, S49, S99 or S115 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to turn on PCG No. 1, 2, 3, 4, 5, 6, 7, or 8 while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated PCG is not ON.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select B(A) side of the CRDU power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S2, S18, S66, S80, S34, S48, S98, or S114 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to turn off PCG No. 1, 2, 3, 4, 5, 6, 7, or 8 while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated PCG is not OFF.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select B(A) side of the CRDU power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S5, S21, S69, S83, S37, S91, S101, or S117 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect Reg. Bus 1 to PCG No. 1, 2, 3, 4, 5, 6, 7, or 8 while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the associated PCG is not connected to Reg.Bus 1.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select B(A) side of the CRDU power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S4, S20, S68, S82, S36, S50, S100, or S116 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect Reg. Bus 2 to PCG No. 1, 2, 3, 4, 5, 6, 7, or 8 while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated PCG is not connected to Reg.Bus 2.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select B(A) side of the CRDU power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 612B50005 (Continued)	L M S	a) 28V output from channel S7, S23, S71, S85, S39, S53, S103, or S119 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to place the associated Battery Charger in the "Inhibit" mode while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated Battery Charger is not in the "Inhibit" mode.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S6, S22, S70, S84, S38, S52, S102, or S118 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to place the associated Battery Charger in the "Auto" mode while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated Battery Charger is not in the "Auto" mode.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S11, S27, S79, S89, S41, S55, S105, or S121 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to bypass the associated Battery Charger while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated Battery Charger has not been bypassed.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B050005 (Continued)	L M S	a) 28V output from channel S10, S26, S78, S28, S40, S54, S104, or S120 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to select the "Norm mode of the associated Battery Charger while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated Battery Charger is not in the "Norm" mode.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S13, S29, S75, S95, S43, S57, S107, or S123 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect the associated Battery to the buses while A(B) side of the CRDU is powered.	a)None.	a) T/M data will indicate that the associated Battery is not connected to the buses.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S12, S28, S74, S94, S42, S56, S106, or S122 when any one of commands S0-S143 is addressed.	a) Loss of ground capability to disconnect the associated Battery from the buses while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated Battery is still connected to the buses.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

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Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S15, S31, S77, S93, S45, S59, S109, or S125 when any one of commands S0 - S143 is addressed.	a) Loss of ground capability to place the associated Battery Charger in the "Low" charge mode while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the assoicated Battery Charger is in the "Auto" charge mode.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S14, S30, S76, S92, S44, S58, S108, or S124 when any one of commands S0 - S143 is addressed.	a) Loss of ground capability to place the associated Battery Charger in the "Auto" charge mode while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the associated Battery Charger is in the "Low" charge mode.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S149, S165, S167, S231, S233, S243, S245, or S450 when any one of commands S144 - S191, S192 - S239, S240 - S287, or S384 - S479 is addressed.	a) Loss of ground capability to select the Secondary Amp Hour Meter for the associated PCG while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Primary Amp House Meter for the associated PCG is still selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B050005 (Continued)	L M S	a) 28V output from channel S148, S164, S166, S230, S232, S242, S244, or S449 when any one of commands S144 - S191, S192 - S239, S240 - S287, or S384 - S479 is addressed.	a) Loss of ground capability to select the Primary Amp Hour Meter for the associated PCG while A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Secondary Amp. Hour Meter for the associated PCG is still selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S61, (S91) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect Reg. Bus 1 (2) to Transfer Bus 1 (2) while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that Reg. Bus 1 (2) is not tied to Transfer Bus 1 (2).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S60 (S90) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to disconnect Reg. Bus 1 (2) from Transfer Bus 1 (2) while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that Reg. Bus 1 (2) is still tied to Transfer Bus 1 (2).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S9 (S110) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect AM Bus 1(2) to Reg. Bus 2 while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indiate that AM Bus 1(2) is tied to Reg. Bus 1.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S8 (S111) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect AM Bus 1(2) to Reg. Bus 1 while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that AM Bus 1(2) is tied to Reg. Bus 2.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S63 (S73) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to connect Transfer Bus 1(2) to ATM Bus 1(2) while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that Transfer Bus 1(2) is not connected to ATM Bus 1(2).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S62 (S72) when any one of commands S0-S143 is addressed.	a) Loss of ground capability to disconnect Transfer Bus 1(2) to ATM Bus 1(2) while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that Transfer Bus 1(2) is not disconnected to ATM Bus 1(2).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

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Command Relay Driver Unit 611B50005 (Continued)	L M S	a) 28V output from channel S147 (S221) when any one of commands S144-S191 is addressed.	a) Loss of ground capability to select the "Airlock" position of Electrical Ground 1(2), while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that either Electrical Ground 1 or 2 is in the "CSM" position.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S146 (S220) when any one of commands S144-S191 (S192-S239) is addressed.	a) Loss of ground capability to select the "CSM" position of Electrical Ground 1(2) while the A(B) side of the CRDU is powered.	a) None.	a) None.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Electrical Ground 2(1).	b) None.	b) None.	b) IIIb	
		a) 28V output from channel S207 (S247) when any one of commands S191-S239 (S240-S287) is addressed.	a) Loss of ground capability to connect OWS Bus 1(2) to AM Bus 1(2) while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that OWS Bus 1(2) is not connected to AM Bus 1(2).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S206 (S246) when any one of commands S191-S239 (S240-S287) is addressed.	a) Loss of ground capability to disconnect OWS Bus 1(2) from AM Bus 1(2) while the A(B) side of CRDU is powered.	a) None.	a) T/M data will indicate that OWS Bus 1(2) is not disconnected from AM Bus 1(2).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S271, S270, S273, or S272 when any one of Commands S240-S287 is addressed.	a) Loss of ground capability to select alternate CSM S-Band Antenna configuration while the A(B) side of the CRDU is powered.	a) None.	a) Possible degradation of CSM S-Band transmissions.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S321, (S423) when any one of commands S288-S335 (S384-S479) is addressed.	a) Loss of ground capability to select the 70°F thermostat control for MDA Primary (Secondary) Wall Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indirectly indicate that the 70°F thermostat has not been selected for the MDA Primary (Secondary) Wall Heaters.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundany provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S320 (S422) when any one of commands S288-S423 (S384-S479) is addressed.	a) Loss of ground capability to select the 45°F thermostat control for MDA Primary (Secondary) Wall Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indirectly indicate that the 45°F thermostat has not been selected for the MDA Primary (Secondary) Wall Heaters.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S400 (S438) when any of commands S384-S479 is addressed.	a) Loss of ground capability to select MDA Wall Heaters 1(2)-Primary while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that MDA Wall Heaters 1(2) - Primary has not been selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B050005 (Continued)	L M S	a) 28V output from channel S398 (S436) when any one of commands S384-S479 is addressed.	a) Loss of ground capability to select MDA Wall Heaters 1(2)-Secondary while the A(B) side of the CRDU is powered.	a) None .	a) T/M data will indicate that MDA Wall Heaters 1(2) - Secondary has not been selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S218 (S217) when any one of commands S192-S239 is addressed.	a) Loss of ground capability to select Primary (Secondary) Tunnel 1 and 2 MDA Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Primary (Secondary) Tunnel 1 and 2 MDA Heaters have not been selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S394 (S393) when any one of commands S384-S479 is addressed.	a) Loss of ground capability to turn ON (OFF) Wall 1 and Tunnel 1 MDA Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that Wall 1 and Tunnel 1 MDA Heaters have not been turned ON (OFF).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S433 (S429) when any one of commands S384-S479 is addressed.	a) Loss of ground capability to turn ON (OFF) Wall 2 and Tunnel 2 MDA Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that Wall 2 and Tunnel 2 MDA Heaters have not been turned ON(OFF).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S265 (S203) when any one of commands S240-S287 (S192-S239) is addressed.	a) Loss of ground capability to select the Secondary CSM (Spare) Port MDA Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that that the Secondary CSM (Port) MDA Heaters have not been selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S264 (S202) when any one of commands S287 (S192-S239) is addressed.	a) Loss of ground capability to select the Primary CSM (Spare) Port MDA Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Primary CSM (Port) MDA Heaters have not been selected.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S261 (S260) when any one of commands S240-S287 is addressed.	a) Loss of ground capability to turn ON (OFF) the MDA Port Heaters while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the MDA Port Heaters are not ON(OFF).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S357 (S356) when any one of commands S336-S383 is addressed.	a) Loss of ground capability to turn ON (OFF) the Proton Spectrometer while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indicate that the Proton Spectrometer is not ON (OFF).	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S358 when any one of commands S336-S383 is addressed.	a) Inadvertant changing of the proton spectrometer count threshold when commands S336-S383 are addressed while the A(B) side of the CRDU is powered.	a) None.	a) T/M data will indirectly indicate that the proton spectrometer count threshold is being inadvertently changed.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and continue mission.	b) IIIb	
		a) 28V output from channel S24 (S126) when any one of commands S0-S143 is addressed.	b) Discone Antennas will be deployed if the Deploy Buses are armed, and any one of commands S0-S143 is addressed while the A(B) side of the CRDU is powered.	a) None.	a) When the Deploy Buses are armed, T/M data will indicate that the Discone Antennas have been deployed.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, discone antennas can be deployed anytime after the Deploy Buses are armed.	b) None.	b) None.	b) IIIb	
		a) 28V output from channel S210 when any one of commands S192-S239 is addressed.	a) Primary Tracking Lights will be inadvertantly turned ON while the A(B) side of the CRDU is powered.	a) Tracking Lights will be OK when the lights should be OFF.	a) T/M data will indicate that the Primary Tracking lights are ON.	a) N/A	----
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Inform ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V. output from channel S293 when any one of commands S288-S335 is addressed.	a) Secondary Tracking Lights will be inadvertently turned on while A(B) side of the CRDU is powered.	a) Tracking Lights will be on when the lights should be off.	a) T/M data will indicate that the Secondary Tracking Lights are on.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to adequate power provisions and ground capability to turn off the tracking lights.	b) Inform Ground of discrepancy.	b) Turn off the Secondary Tracking Lights via CRDU channel S211.	b) IIIb	
		a) 28V. output from channel S211 when any one of commands S192-S239 is addressed.	a) Loss of capability to turn on the Primary Tracking Lights and the capability to keep the Secondary Tracking Lights on while the A(B) side of the CRDU is powered.	a) Tracking lights will not be on when the lights should be on.	a) T/M data will indicate that the Tracking Lights are not on.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Inform the Ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and continue mission.	b) IIIb	
		a) 28V. output from channel S292 when any one of commands S288-S335 is addressed.	a) Loss of the Tracking Lights Auto Switchover Mode while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	—
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required.	
	L M S	a) 28V. output from channel S349 when any one of commands S336-S383 is addressed.	a) Loss of OWS Meteoroid Shield EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	Investigate monitoring OWS Meteoroid Shield EBW Firing Unit 1 charge voltage by T/M.
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of #2 Firing Unit.	b) None	b) None	b) N/A (Multiple failures required).	
		a) 28V. output from channel S348 when any one of commands S336-S383 is addressed.	a) Partial loss of capability to prevent inadvertently firing OWS Meteoroid Shield EBW Firing Unit 1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/ A	
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure	b) None	b) None	b) NA (Multiple failures required).	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V. output from channel S339 when any one of commands S336-S383 is addressed.	a) Loss of OWS Meteoroid Shield EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	—
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of #2 Firing Unit.	b) None	b) None	b) NA (Multiple failures required.)	Investigate monitoring OWS Meteoroid Shield EBW Firing Unit 1 charge voltage by T/M.
	L M S	a) 28v. output from channel S379 (S251) when any one of commands S336-S383 (S240-S287) is addressed.	a) Loss of capability to deploy or retract Scientific Airlock Exp. 149 while the A(B) side of the CRDU is powered.	a) Scientific Airlock Exp. 149 is not deployed or retracted according to flight plan.	a) OWS/T/M data will indicate that Scientific Airlock Exp. 149 has not been retracted or deployed.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Inform Ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V. output from channel S378 (S250) when any one of commands S336-S383(S240-S287) is addressed.	a) Power will be applied to Scientific Airlock Exp. 149 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure	b) None	b) None	b) N/A (Multiple failures required.)	
		a) 28V. output from channel S381 (S257) when any one of commands S336-S383 (S240-S287) is addressed.	a) Loss of capability to deploy Scientific Airlock Exp. 149 while the A(B) side of the CRDU is powered.	a) Scientific Airlock Exp. 149 is not deployed according to flight plan.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been deployed.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Inform Ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function	b) IIIb	
		a) 28V. output from channel S184 (S262) when any one of commands S143-S191 (S240-S287) is addressed.	a) Loss of capability to keep the OWS Habit Area Sol. Vent Valve 1 and 2 (3 & 4) closed, while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data will indicate that the Vent Valves are being inadvertently opened during storage.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU. Note: Vent Valve lines are sealed during manned phases to preclude accidental venting.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function.	b) IIIb	
		a) 28V. output from channel S205 (267) when any one of commands S192-S239 (S240-S287) is addressed.	a) Loss of capability to close OWS Habit Area Sol. Vent Valve 1 and 3 (2 and 4) while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data will indicate that OWS Habit Area Sol. Vent Valve 1 & 3 (2 & 4) are not closed.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by vent valve 2 & 4 (1 & 3).	b) None	b) Close OWS Habit Area Sol. Vent Valve 2 and 4 (1 and 3) via CRDU.	b) IIIb	
		a) 28V. output from channel S204 or S266 when any one commands S192-S239 or S240-S287 is addressed.	a) Loss of capability to vent the OWS via OWS Habit Area Sol. Vent Valves while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data will indicate that the vent valves are closed.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function.	b) IIIb	
		a) 28V. output from channel S355, S345, or S347 when any one of commands S336-S383 is addressed.	a) Loss of capability to transfer control from the I-U to the ATM for one-half of the redundant TACS while side A(B) of the CRDU is powered.	a) None	a) OWS T/M data will indicate the TACS transfer switching has not occurred for one-half of the redundant TACS.	a) N/A	—

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a] 28V. output from channel S380 (S256) when any one of commands S336-S383 (S240-S287) is addressed.	a] Loss of capability to retract Scientific Airlock Exp. 149 while the A(B) side of the CRDU is powered.	a] Scientific Airlock Exp. 149 is not retracted according to flight plan.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been retracted.	a] N/A	—
		b] Mechanical or thermal stress.	b] None, due to redundancy provided by internally redundant CRDU.	b] Inform Ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function	b] IIIb	
		a] 28V. output from channel S383 (2777) when any one of commands S336-S383(S240-S287) is addressed.	a] Loss of capability to retract Scientific Airlock Experiment S149 while the A(B) side of the CRDU is powered.	a] Scientific Airlock Exp. 149 is not retracted according to flight plan.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been retracted.	a] N/A	—
		b] Mechanical or thermal stress.	b] None, due to redundancy provided by internally redundant CRDU.	b] Inform Ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function	b] IIIb	
		a] 28V. output from channel S382 (S276) when any one of commands S336-S383 (S240-S287) is addressed.	a] Loss of capability to deploy Scientific Airlock Exp. 149 while the A(B) side of the CRDU is powered.	a) Scientific Airlock Exp. 149 is not deployed according to flight plan.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been deployed.	a] N/A	—
		b] Mechanical or thermal stress.	b] None, due to redundancy provided by internally redundant CRDU.	b] Inform Ground of discrepancy.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function	b] IIIb	
		a] 28V. output from channel S185 (S263) when any one of commands S143-S191 (S240-S287) is addressed.	a) Loss of capability to vent the OWS during storage via OWS Habit Area Sol. Vent Valve 1 & 2(3 & 4) while the A(B) side of the CRDU is powered.	a] None	a) O/W T/M data will indicate that vent involves 1 & 2 (3 & 4) are still closed.	a] N/A	—

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function	b) IIIb	
		a) 28V. output from channel S283, S313, or S315 when any one of commands 240-S287 or S288-S335 is addressed.	a) Loss of capability to transfer control from the I-U to the ATM for one-half of the redundant TACS while side A(B) of the CRDU is powered.	a) None	a) OWS T/M data will indicate the TACS transfer switching has not occurred for one-half of the redundant TACS.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B), and perform switching function.	b) IIIb	
		a) 28V. output from channel S354, S282, S344, S312, S346, S314, S343, or S311 when any one of commands S240-S287 or S288-S335 is addressed.	a) Partial loss of capability to prevent inadvertent switching of TACS control from OWS IU to ATM while side A(B) of CRDU is powered.	a) None	a) OWS T/M data will indicate that part of TACS transfer circuitry has switched inadvertently.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and switch TACS transfer circuitry to proper state.	b) IIIb	
		a) 28V. output from channel S173 or S162 when any one of commands S143-S191 is addressed.	a) Loss of OWS Wing Sections EBW Firing Unit 1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	Investigate the possibility of monitoring OWS Wing Section EBW Firing Unit #2 charge voltage by T/M.
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of EBW Firing Unit #2.	b) None	b) None	b) NA (Multiple failures required)	
		a) 28V. output from channel S172 when any one of commands S143-S191 is addressed.	a) Partial loss of capability to prevent inadvertent firing of OWS Wing Sections EBW Firing Unit 1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	Investigate the possibility of monitoring OWS Wing Section EBW Firing Unit #2 charge voltage by T/M.

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005	L M S	b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of EBW Firing Unit #2.	b) None	b) None	b] NA (Multiple failures required]	
(Continued)		a) 28V. output from channel S183 or S163 when any one of commands S143-S191 is addressed	a) Loss of OWS SAS Fairings EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a] N/A	Investigate the possibility of monitoring OWS SAS Fairings EBW Firing Unit 1 change voltage T/M.
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of EBW Firing Unit #2.	b) None	b) None	b] NA (Multiple failures required]	
		a) 28V. output from channel S182 when any one of commands S143-S191 is addressed.	a] Partial loss of capability to prevent inadvertent firing of OWS SAS Fairings EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a] N/A	Investigate the possibility of monitoring OWS SAS Fairings EBW Firing Unit 1 change voltage T/M.
		b] Mechanical or thermal stress.	b) None, function is required only in event of power failure.	b) None	b) None	b] NA (Multiple failures required]	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 611850005 (Continued)	L M S	a) 28V output from channel S208 when any one of commands S192-S239 is addressed.	a) Loss of capability to turn off the 60°F thermostat control on the AM Wall Heaters while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the 60°F thermostat control of the AM Wall Heaters has not been turned off.	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the internally redundant CRDU.	b) None	b) Se[illegible] side of the CRDU, [illegible] side A(B) and perfo[illegible] function.	b) [illegible]	
		a)28V output from channel S159 when any one of commands S144-S191 is addressed.	a) Loss of capability to turn on the 40°F thermostat control on the AM Wall Heaters while the A(B) side of the CRDU is powered.	a) None	a) No[illegible]	a) [illegible]	
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure, the 40°F and 60°F thermostats are both turned on. The 40°F provides a back-up for the 60°F.	b) None	b) None	b) N/A (Multiple failures required)	
		a) 28V output from channel S158 when any one of commands S144-S191 is addressed.	a) Loss of capability to turn off the 40°F thermostat control on the AM Wall Heaters while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the internally redundant CRDU.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 612850005 (Continued)	L M S	a) 28V out put from channel S157 (S259) when any one of commands S144-S191 (S192-S239) is addressed.	a) Loss of Ground capability to open the Primary (Secondary) CWS Fill Valve while the A(B) side of the CRIU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) CWS Fill Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) CWS Fill Valve.	b) Manually open the Primary (Secondary) CWS Fill Valve if requested by Ground.	b) Open the Secondary (Primary) CWS Fill Valve via CRIU or request the crew to manually open the Primary (Secondary) CWS Fill Valve.	b) IIIb	
		a) 28V output from channel S156 (S258) when any one of commands S144-S191 (S192-S239) is addressed.	a) Loss of Ground capability to open the Primary (Secondary) CWS Fill Valve while the A(B) side of the CRIU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) CWS Fill Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) CWS Fill Valve.	b) Manually open the Primary (Secondary) CWS Fill Valve if requested by Ground.	b) Open the Secondary (Primary) CWS Fill Valve via CRIU or request the crew to manually open the Primary (Secondary) CWS Fill Valve.	b) IIIb	
		a) 28V output from channel S156 (S258) when any one of commands S144-S191 (S192-S239) is addressed.	a) Loss of Ground capability to close the Primary (Secondary) CWS Fill Valve while the A(B) side of the CRIU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) CWS Fill Valve is still open.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRIU.	b) Manually close the Primary (Secondary) CWS Fill Valve if requested by Ground.	b) Select the A(B) side of the CRIU, power down side A(B) and perform switching function or request crew to manually close the valve.	b) IIIb	
		a) 28V output from channel S209 when any one of commands S192-S239 is addressed.	a) Loss of capability to turn on the 60°F thermostat control on the AM Wall Heaters while the A(B) side of the CRIU is powered.	a) None	a) T/M data will indirectly indicate that the 60°F thermostat control of the AM Wall Heaters is not functioning.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the 40°F thermostat control.	b) None	b) Select the B(A) side of the CRIU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B350005 (Continued)	L M S	a) 28V output from channel S174 (S228) when any one of commands S144-S191 (S192-S239) is addressed.	a) Loss of Ground capability to close the Primary (Secondary) N_2 Fill Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) N_2 Fill Valve is still closed..	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Manually close Primary (Secondary) N_2 Fill Valve if requested by Ground.	b) Select the B(A) side of the CRDU power down side A(B), and perform switching function or request crew to manually close the valve.	b) IIIb	
		a) 28V output from channel S181 (S227) when any one of commands S104-S191 (S192-S239) is addressed.	a) Loss of Ground capability to open the Primary (Secondary) AM Fill Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) AM Fill Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) AM Fill Valve.	b) Manually open the Primary (Secondary) AM Fill Valve if requested by Ground.	b) Open the Secondary (Primary) AM Fill Valve via CRDU or request the crew to manually open the Primary (Secondary) AM Fill Valve.	b) IIIb	
		a) 28V output from channel S180 (S226) when any one of commands S194-S191 (S192-S239) is addressed.	a) Loss of Ground capability to close the Primary (Secondary) AM Fill Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary AM Fill Valve is still open.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Manually close the Primary (Secondary) AM Fill Valve if requested by Ground.	b) Select the B(A) side of the CRDU power down side A(B) and perform switching function or request crew to manually close the valve.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 51R050005 (Continued)	L M S	a) 28V output from channel 8384 (S426) when any one of commands 8384-8479 is addressed.	a) Loss of Ground capability to open the Primary (Secondary) N_2 Supply Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the Primary (Secondary) N_2 Supply Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Secondary (Primary) N_2 Supply Valve.	b) Manually open the Primary (Secondary) N_2 Supply Valve if requested by Ground.	b) Open the Secondary (Primary) N_2 Supply Valve via CRDU or request crew to manually open the Primary (Secondary) N_2 Supply Valve.	b) IIIb	
		a) 28V output from channel 8161 (S214) when any one of commands 8144-8191 (8192-8239) is addressed.	a) Loss of Ground capability to close the Primary (Secondary) O_2 Fill Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) O_2 Fill Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) O_2 Fill Valve.	b) Manually open Primary (Secondary O_2 Fill Valve if requested by Ground.	b) Open the Secondary (Primary) O_2 Fill Valve via CRDU or request crew to manually open the Primary (Secondary) O_2 Fill Valve.	b) IIIb	
		a) 28V output from channel 8160 (S218) when any one of commands 8144-8191 (8192-8239) is addressed.	a) Loss of Ground capability to close the Primary (Secondary) O_2 Fill Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) O_2 Fill Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Manually close Primary (Secondary) O_2 Fill Valve if requested by Ground.	b) Select the B(A) side of the CRDU, power down side A(B), and performs switching function or request crew to manually close the valve.	b) IIIb	
		a) 28V output from channel 8175 (S229) when any one of commands 8144-8191 (8192-8239) is addressed.	a) Loss of Ground capability to open the Primary (Secondary) N_2 Fill Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indirectly indicate that the Primary (Secondary) N_2 Fill Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) N_2 Fill Valve.	b) Manually open Primary (Secondary) N_2 Fill Valve if requested by Ground.	b) Open the Secondary (Primary) N_2 Fill Valve via CRDU or request crew to manually open the Primary (Secondary) N_2 Fill Valve.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 617850005 (Continued)	L M S	a) 28V output from channel S365 (S425) when any one of commands S336-S383 (S384-S479) is addressed.	a) Loss of Ground capability to close the Primary (Secondary) O_2 Supply Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the Primary (Secondary) O_2 Supply Valve is still open.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Manually close Primary (Secondary) O_2 Supply Valve if requested by Ground.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function or request crew to manually close the Primary (Secondary) O_2 Supply Valve.	b) IIIb	
		a) 28V output from channel S364 (S424) when any one of commands S336-S383 (S384-S479) is addressed.	b) Loss of Ground capability to open the Primary (Secondary) O_2 Supply Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the Primary (Secondary) O_2 Supply Valve is still closed.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Secondary (Primary) O_2 Supply Valve.	b) Manually open the Primary (Secondary) O_2 Supply Valve if requested by Ground.	b) Open the Secondary (Primary) O_2 Supply Valve via CRDU on request crew to manually open the Primary (Secondary) O_2 Supply Valve.	b) IIIb	
		a) 28V output from channel S385 (S427) when any one of commands S384-S479 is addressed.	a) Loss of Ground capability to close the Primary (Secondary) N_2 Supply Valve while the A(B) side of the CRDU is powered.	a) None	a) T/M will indicate that the Primary (Secondary) N_2 Supply Valve is still open.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Manually close the Primary (Secondary) N_2 Supply Valve if requested by Ground.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function or request crew to manually close the Primary (Secondary) N_2 Supply Valve.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 611B350005 (Continued)	L M S	a) 28V output from channel S387, (S287) when any one of commands S384-S479 (S240-S287) is addressed.	a) Loss of Group I(II) Auto-Switch Over Sensor while A(B) side of the CRDU is powered.	a) None	a) T/M data will indiacte that Group I(II) Auto-Switch Over Sensors are not powered.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Auto-Switch Over Sensor Group II(I).	b) None	b) Select Group II(I) Auto-Switch Over Sensors via CRDU S286(S386).	b) IIIb	
		a) 28V output from channel S386 (S286) when any one of commands S384-S479 (S240-S287) is addressed.	a) Loss of capability to turn off Group I(II) Auto-Switch Over Sensors while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that Group I(II) Auto-Switch Over Sensors are still powered after CRDU command S387 (S287).	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S447 (S214) when any one of commands S384-S479 (S192-S239) is addressed.	a) Loss of capability to select the "Norm" mode of Pri.(Sec) End. Flow while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that Pri. (Sec) Radiator is in the "Bypass" mode.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Sec. (Pri.) Radiator.	b) None	b) Select the alternate coolant loop and "Norm" mode of the Sec.(Pri) Radiator.	b) IIIb	
		a) 28V output from channel S448 (S125) when any one of commands S384-S479 (S192-S239) is addressed.	a) Loss of capability to select the "Bypass" mode of Pri. (Sec) Radiator Flow while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that Pri. (Sec) Radiator is in the "Norm" mode.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Sec. (Pri) Radiator.	b) None	b) Select the alternate coolant loop and mode of the Sec. (Pri) Radiator.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B650005 (Continued)	L M S	a) 28V output from channel S152, S178, S212, S238, S254 or S366 when any one of commands S144-S191, S192-S239, S240-S287, or S336-S383 is addressed.	a) Loss of Ground capability to turn off the associated coolant loops inverter and to turn on an alternate inverter in the same coolant loop.	a) None	a) T/M data will indicate that the associated inverter is still in the "ON" mod. after CRDU command to turn it off.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundant coolant loops.	b) Manually turn off coolant loop inverter and select alternate inverter upon Ground request.	b) Request creq to turn inverter off and select desired inverter or use alternate coolant loop and inverter.	b) IIIb	
		a) 28V output from channel S189, S191, S279, S317, S319, or S353 when any one of commands S144-S191, S240-S287, S288-S335, or S336-S383 is addressed.	a) Loss of Ground capability to turn associated coolant loop pump on while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the associated pump is not on.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundant pumps and coolant loops.	b) Manually select associated pump upon Ground request.	b) Select an alternate coolant loop pump on request crew to manually select desired pump.	b) IIIb	
		a) 28V output from channel S188, S190, S278, S316, or S352 when any one of commands S144-S191, S240-S287, S288-S335, or S336-S383 is addressed.	a) Loss of Ground capability to turn associated coolant loop pumps off while A(B) side of the CRDU is powered.	a) None	a) T/M will indicate that the associated coolant loop pump is on after CRDU command to turn it off.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) Manually turn off associated pump.	b) Request crew to manual turn pump off or select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 612359005 (Continued)	L M S	a) 28V output from channel S307 when any one of commands S288-S335 is addressed.	a) Loss of capability to fire "A" ATM SAS Deploy while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the charging voltage of Firing Unit A does not build up.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by ATM SAS Deploy Fire B.	b) None	b) Perform function via CRDU command S306 and Firing Unit B.	b) IIIb	
		a) 28V output from channel S306 when any one of commands S288-S335 is addressed.	a) Loss of capability to fire "B" ATM SAS Deploy while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the charging voltage of Firing Unit B does not build up.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by ATM SAS Deploy Fire A.	b) None	b) Perform function via CRDU command S307 and Firing Unit A.	b) IIIb	
		a) 28V output from channel S281 when any one of commands S240-S287 is addressed.	a) Loss of capability to turn the ATM A&PCS off via ATM Decoder and Receiver while A(B) side of the CRDU is powered.	a) None	a) ATM T/M data will indicate the A & PCS electronics is still powered.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S153, S179 S213, S239, S255 or S267 when any one of commands S144-S191, S192-S239, S240-S287, or S336-S383 is addressed.	a) Loss of capability to turn on the associates ecolant loop inverter while A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the associated inverter is not powered.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundant inverters and coolant loops.	b) None	b) Select an alternate coolant loop inverter.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S326 or S324 when any one of commands S288-S335 is addressed.	a) Partial loss of protection against prematurely jettisoning the Payload Shroud while the A (B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the associated EBW's will be prematurely charged.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by redundant CRDU.	b) None	b) Select the B (A) side of the CRDU, power down side A (B) and remove power from EBW's via channel S323.	B) IIIb	
		a) 28V output from channel S341 when anyone of commands S336-S383 is addressed.	a) Loss of capability to deploy the ATM via CRDU while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the CRDU ATM deployment command have no affect.	a) N/A	----------
		b). Mechanical or thermal stress.	b) None function is required only in event of prior failure.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) N/A (Multiple failures required)	
		a) 28V output from channel S336 or S340 when any one of commands S336-S383 is addressed.	a) Partial loss of protection against inadvertently switching ATM deployment control from OWS IU to CRDU.	a) None	a) None	e) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) IIIb	
		a) 28V output from channel S337 when any one of commands S336-S383 is addressed.	a) Partial loss of protection against inadvertently deploying the ATM while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the ATM DA Latch Release EBW is prematurely charged.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None, since EBW will be fired shortly after the EBW is charged.	b) N/A (Multiple failures required.)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S328 when any one of commands S288 - S335 is addressed.	a) Premature powering of the Sequential Buses which results in partial loss of protecting against early activation of functions powered from the Sequential Buses.	a) None	a) T/M data will indicate that the Sequential Buses are powered.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) IIIb	
		a) 28V output from channel S323 when any one of commands S288 - S335 is addressed.	a) Loss of capability to jettison the Payload Shroud via the CRDU while the A(B) side of the CRDU is powered.	a) None	a) T/M data will indicate that the PS EBW's cannot be charged via CRDU command.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failures. OWS I.U. is primary system.	b) None	b) Select the B(A) side of the CRDU power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S322 when any one of commands S288 - S335 is addressed.	a) Partial loss of protection against prematurely jettisoning the Payload Shroud.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failures.	b) None	b) None	b) IIIb	
		a) 28V output from channel S325 or S327 when any one of commands S288 - S335 is addressed.	a) Loss of Ground capability to jettison the Payload Shroud via CRDU while the A(B) side of the CRDU is powered.	a) None	a) T/M data of associated EBW's will not build up firing voltages.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from channel S369 when any one of commands S336 - S383 is addressed.	a) Loss of Ground capability to jettison the OWS radiator protective shield while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data concerning radiator temperature will indicate that the protective shield has not been jettisoned.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) N/A (Multiple failures required)	
		a) 28V output from channel S368 when any one of commands S336 - S383 is addressed.	a) OWS radiator protective shield will be jettisoned when the Sequential Buses are powered.	a) None	a) OWS radiator temperature OWS T/M data will indicate that the shield has been jettisoned.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, since the Sequential Buses are not powered until 10 seconds after insertion into orbit at which time the jettison of the radiator shield has no effect.	b) None	b) None	b) IIIb	
		a) 28V output from channel S309 or S308 when any one of commands S288 - S335 is addressed.	a) Premature turn on of ATM SAS Wings deployment motors while the A(B) side of the CRDU is powered. Deployment motors can run approximately 10 minutes without damage due to a slip-clutch.	a) None	a) ATM T/M data will indicate that the ATM SAS Wings deployment motors are on when the Sequential Buses are powered, or prior to releasing the ATM SAS Wing.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by redundant CRDU.	b) None	b) Attempt to turn the deployment motors off via CRDU command S305. Then select the B(A) side of the CRDU, power down side A(B) and perform switching function via command S305.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	a) 28V output from from channel S197 (S237) when any one of commands S192-S239 is addressed.	a) Loss of capability to turn on the associated 4 OWS Radiant Heaters while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data concerning the temperature of the film and food storage containers will indicate that the heaters are not on.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by redundant OWS Radiant Heaters.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S196 (S236) when any one of commands S192 - S239 is addressed.	a) Loss of capability to turn off the associated 4 OWS Radiant Heaters while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data concerning the temperature of the film and food storage containers will indicate that the heaters are on.	a) N/A	----------
		b) Mechanical or thermal stress	b) None, due to redundancy provided by redundant CRDU.	b) None	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S361 (S291) when any one of commands S336 - S383 (S288 - S335) is addressed.	a) Loss of one of the two redundant OWS Refrigeration System Lamps while the A(B) side of the CRDU is powered.	a) None	a) OWS T/M data will indicate that the associated OWS Refrigeration System Lamp is not on.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundant OWS Refridgeration system loops, and due to redundant CRDU.	b) None	b) Select the B(A) of the CRDU, power down side A(B) and perform switching function.	b) IIIb	
		a) 28V output from channel S360 (S290) when any one of commands S336 - S 383 (S288 - S335) is addressed.	a) Loss of capability to turn off the OWS Refrigeration System Primary (secondary) loop while the A(B) side of CRDU is still on.	a) None	a) OWS T/M data will indicate that the associated OWS Refrigeration System loop is still on.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in the event of prior failure.	b) None.	b) Select the B(A) side of the CRDU, power down side A(B) and perform switching function.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
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COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode Blocking For Emer. Start For Secondary Electronic Timer Channel S252 52-79728-1 2.2.30	L M S	a) Short.	a) Loss of isolation between channels S138 and S252 of the CRDU.	a) None	a) None	a) N/A	——
		b) Contamination.	b) None, due to redundancy, secondary signal source only.	b) None	b) None	b) IIIb	
		a) Open.	a) Loss of channel S252 of CRDU to activate the emergency start of the secondary Electronic Timer.	a) None	a) None	a) N/A	——
		b) Defective bond due to mechanical stress.	b) None due to redundancy provided by channel S138 of the CRDU.	b) None	b) None	b) IIIb	
Diode, Blocking For Emer. Start For Secondary Electronic Timer Channel S138 52-79728-1 2.2.31	L M S	a) Short.	a) Loss of isolation between channels S252 and S138 of the CRDU.	a) None	a) None	a) N/A	——
		b) Contamination.	b) None, due to redundancy, secondary signal source only.	b) None	b) None	b) IIIb	
		a) Open.	a) Loss of channel S138 of CRDU to activate the emergency start of the Secondary Electronic Timer.	a) None	a) None	a) N/A	——
		b) Defective bond due to mechanical or thermal stress.	b) None due to redundancy provided by channel S252 of the CRDU.	b) None	b) None	b) IIIb	
Diode, Blocking For Data Transfer Man, Relay (Reset coil) 52-79728-1 2.2.32	L M S	a) Short.	a) When the Secondary DCS is selected via Primary DCS the Data Transfer Select Relay will cycle resulting in loss of data transfer between the Electronic Timer and DCS.	a) None	a) F/M data will indicate loss of data transfer between the Electronic Timers and DCS.	a) N/A	——
		b) Contamination.	b) None, turning off the Secondary DCS via Primary DCS will alleviate problem.	b) None	b) Power down the Secondary DCS via the Primary DCS.	b) IIIb	
		a) Open.	a) Loss of crew capability to manually power the Secondary DCS.	a) None	a) Request crew to place the Command System Switch in the "CMD" position.	a) N/A	——

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, Blocking For Data Transfer Man. Relay (Reset Coil) 52-79728-1 (Continued)	L M S	b) Defective bond due to mechanical or thermal stress.	b) None, due to Ground capability to select the Secondary DCS.	b) Upon Ground request place the Command System Switch in the "Cmd" position.	b) Request the crew to place the Command System Switch in the "Cmd" position, and select the Secondary DCS via Primary DCS.	b) IIIb	
Diode, Blocking For DCS Secondary PWR Relay (Pole E) 52-79728-1 2.2.33	L M S	a) Short	a) When the Secondary DCS is powered and the TR-30 is latched, the Data Transfer Cmd Relay will cycle resulting in loss of data transfer between the Electronic Timer and DCS.	a) None	a) T/M data will indicate loss of data transfer between the Electronic Timers and DCS.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, Ground can reset the TR-30 Secondary DCS On Relay.	b) None	b) Reset the TR-30 Secondary DCS On Relay via CRDU channel S280.	b) IIIb	
		a) Open	a) Loss of capability to connect the Electronic Timer to the Secondary DCS via the TR-30 function.	a) None	a) During in flight testing of the TR-30 function the Secondary DCS will not be connected to the Electronic Timer.	a) N/A	- - - - - - - - - -
		b) Defective bond due to mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) Continue mission with both DCS 's powered.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, Blocking For DCS Channel 27 - Set 52-79728-1 2.2.3¼A	L M S	a) Short	a) When the Secondary DCS is manually selected via the Command System Switch, the Data Transfer Cmd. Relay will cycle resulting in loss of data transfer between the Electronic Timer and DCS.	a) None	a) T/M data will indicate loss of data transfer between the Electronic Timer and DCS.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, crew can manually select the Primary DCS.	b) Upon Ground request select the Primary DCS via the Command System Switch.	b) Request crew to manually select the Primary DCS.	b) IIIb	
		a) Open	a) Loss of capability to turn on the Secondary DCS via Primary DCS.	a) None	a) T/M data will indicate that the Primary DCS has not turned on the Secondary DCS.	a) N/A	- - - - - - - - - -
		b) Defective Bond due to mechanical or thermal stress.	b) None, Electronic Timer TR-30 function can turn on the Secondary DCS.	b) None	b) Allow the Electronic Timer TR-30 to time out and turn on the Secondary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, Blocking For DCS Channel 27. - Reset 52-79728-1 2.2.34B	L M S	a) Short	a) When the Primary DCS is manually selected via the Command System Switch, the Data Transfer Cmd. Relay will cycle resulting in loss of data transfer between the Electronic Timer and DCS.	a) None	a) T/M data will indicate loss of data transfer between the Electronics Timer and DCS.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, crew can manually select the Secondary DCS.	b) Upon Ground request select the Secondary DCS via the Command System Switch.	b) Request crew to manually select the Secondary DCS.	b) IIIb	
		a) Open	a) Loss of capability to turn off off the Secondary DCS via the Primary DCS.	a) None	a) T/M data will indicate that the Primary DCS has not turned the Secondary DCS off.	a) N/A	- - - - - - - - - -
		b) Defective Bond due to mechanical or thermal stress.	b) None, due to adequate power provisions.	b) None	b) Continue mission with both DCS's powered.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, Blocking For Either Reset Line of the Primary or Secondary DCS. 52-79728-1 (1 of 4) 2.2.35 2.2.36 2.2.37 2.2.38	L M S	a) Short,	a) None, blocking function is required for protection from GSE.	a) None	a) None,	a) N/A	-----
		b) Contamination,	b) None, required for GSE application only.	b) None	b) None.	b) IIIb	
		a) Open,	a) Loss of the reset function to one half of the associated DCS channels from the associatod DCS Receiver Decoder.	a) None	a) T/M data will indirectly indicate loss of reset function to the DCS relays from the associated DCS.	a) N/A	----
		b) Defective bond due to mechanical or thermal stress.	b) None due to redundant DCS's.	b) None	b) Perform switching function via alternate DCS.	b) IIIb	
Diode, Blocking For Set Line of the Primary or Secondary DCS. 52-79728-1 (1 of 2) 2.2.39 2.2.40	L M S	a) Short,	a) None, blocking function is required for protection from GSE.	a) None	a) None	a) N/A	----
		b) Contamination,	b) None, required for GSE application only.	b) None	b) None	b) IIIb	
		a) Open,	a) Loss of the set function to the DCS relay modules from the associated DCS Receiver Decoder.	a) None	a) T/M data will indirectly indicate loss of set function from the associated DCS Receiver Decoder to DCS Relay Modules.	a) N/A	----
		b) Defective bond due to mechanical or thermal stress.	b) None, due to redundant DCS's.	b) None	b) Perform switching function via alternate DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Teleprinter 61B850018 (Teleprinter provides printed data from ground via DCS.) 2.2.41	M	a) Loss of printing capability.	a) Loss of printed data from ground via Teleprinter.	a) Loss of printing capability of the Teleprinter.	a) NONE	a) N/A	----------
		b) Thermal or mechanical over stress of electronic components.	b) None due to redundancy provided by spare Teleprinter.	b) Inform ground of failure of Teleprinter, replace with spare Teleprinter.	b) NONE	b) IIIb	
		a) Loss of output from pin G of connector P1.	a) Loss of T/M data of Input Power to the Teleprinter.	a) None	a) T/M data will indicate loss of power to the Teleprinter.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, crew then verify proper operation of the Teleprinter.	b) Verify proper operation of the Teleprinter if requested by ground.	b) Request crew to verify operation of the Teleprinter.	b) IIIb	
		a) Loss of output from pin AM of connector P1.	a) Loss of T/M data of Teleprinter paper low, resulting is possible permanent damage to the printing heads of the Teleprinter.	a) None	a) Loss of T/M data of Teleprinter low.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, information can be provided to the crew via voice communication.	b) Increase surveillance of system if requested by Ground.	b) Request crew to increase surveillance of the proper status of the Teleprinter.	b) IIIb	
Interface Electronics Unit 61B850019 (Interface Electronics Unit provides interface electronics between the DCS and Teleprinter.) 2.2.42	M	a) Loss of output to Teleprinter.	a) Loss of printed data from ground via Teleprinter.	a) Loss of printing capability of the Teleprinter.	a) NONE	a) N/A	----------
		b) Thermal or mechanical over stress of electrical components.	b) None, due to redundancy provided by voice communications.	b) Inform ground of failure of Teleprinter.	b) Provide required data via voice communications.	b) IIIb	
		a) Loss of output from pin F or G of connector P5.	a) Loss of T/M data of Message complete from the Interface Electronics Unit.	a) None	a) Loss of T/M data of Message complete from the Interface Electronics Unit	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, crew can verify proper operation of the Teleprinter.	b) Verify proper operation of the Teleprinter if request by Ground.	b) Request crew to check the operation of the Teleprinter.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic Teleprint 52-79721-322 (4.5A) 2.2.43 (Provides circuit protection for power circuitry for the Teleprinter and Interface Electronics Unit)	M	a) Open before break current is exceeded.	a) Loss of power to the Teleprinter and Interface Electronics Unit.	a) The bat handle will be in the "OFF" position, and Teleprinter does not work.	a) T/M data will indicate loss of power to Teleprinter.	a) N/A	---
		b) Internal defect, coil shor t to ground.	b) None, due to redundancy provided by voice communications.	b) Inform Ground of failure.	b) Provided data via voice communication.	b) IIIb	
Switch, toggle. Teleprint 52-79705-13 2.2.44 (Provides capability to manually power the Interface Electronics Unit and Teleprinter or via the DCS.)	L M S	a) Contact set (2,1) fails open in the Cmd. position.	a) Loss of capability to power the IEU and Teleprinter electronics via DCS.	a) None.	a) T/M data will indicate that the I.E.U. and Teleprinter are not powered when DCS Channel 25 on command is performed.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by crew's capability to provide power.	b) Place the switch in the "ON" position upon Ground request.	b) Request crew to place the Teleprint Switch in the "ON" position.	b) IIIb	
		a) Contact set (2,3) fails open in the "ON" position.	a) Loss of one of the redundant methods of providing power to the paper advance motor.	a) None.	a) None.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (5,6).	b) None.	b) None.	b) IIIb	
		a) Contact set (5,4) fails open in the "Cmd" position.	a) Loss of power to the paper advance motor when DCS Channel 25 is off and the Teleprint switch is in the "Cmd" position.	a) Slew mode of the Teleprinter does not operate.	a) None.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to crew capability to provide power to the stepping motor.	b) Place the Teleprint Switch in the "ON" position and advance paper.	b) None.	b) IIIb	
		a) Contact set (5,6) fails open in the "ON" position.	a) Loss of manual capability to power the IEU and Teleprinter.	a) The teleprinter is inoperative when the Teleprint Switch is in the "ON" position.	a) T/M data will indicate that the I.E.U and Teleprinter are not powered.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by DCS.	b) Place the switch in the "Cmd" position. Inform Ground of discrepancy.	b) Request crew to place the Teleprint Switch in the "Cmd" position.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, ATM T/M Mod. Mode No. 1(2)(3)(4) isolation (K4-110) (K4-111) (K4-112) (K4-113) 52-79703-1 (1 of 4) (Provides Ground capability to select ATM T/M Mode No. 1(2)(3)(4) via CRDU) 2.2.45-.48	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to select ATM T/M Mod. Mode No. 1(2)(3)(4) via CRDU.	a) None	a) ATM T/M data will indicate that ATM T/M Mod. Mode No. 1(2)(3)(4) has not been selected.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, due to redundancy provided by ATM Decoder and Rcvrs.	b) None	b) Perform switching function via ATM Decoder and Rcvrs.	b) IIIb	
Relay, momentary, AM/OWS SAL 1(2) On isolation (K4-88) (K4-44) 52-79703-1 (1 of 2) (Provides Ground capability to power Scientific Airlock Experiment 149.) 2.2.49 2.2.50	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to deploy or retract the Scientific Airlock Exp. 149 from one side of the OWS.	a) Scientific Airlock Exp. 149 is not deployed or retracted according to flight plans.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been deployed or retracted.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) Loss of data from Scientific Airlock Exp. 149.	b) Inform Ground of dsicrepancy, and if not deployed, install experiment on other side of the OWS.	b) If not deployed, request crew to install experiment on opposite side of OWS and deploy via CRDU.	b) IIIb	
Relay, momentary, AM/OWS SAL 1A(2A) - Off isolation (K4-89) (K4-95) 52-79703-1 (1 of 2) (Provides capability to remove power from Scientific Airlock Exp. 149). 2.2.50 2.2.51	L M S	a) Coil fails open or Pole A fails open.	a) Power will be applied to Scientific Airlock Exp. 149.	a) None	a) None	a) N/A	It is assumed that the crew will trip the circuit breakers which is providing power prior to disconnecting SAL Exp. 149.
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, AM/OWS SAL 1B (2B) on isolation (K4-90) (K4-96) 52-79703-1 (1 of 2) (Provides capability to deploy Scientific Airlock Exp. 149.) 2.2.52 2.2.53	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to deploy Scientific Airlock Exp. 149 from the side of the OWS.	a) Scientific Airlock Exp. 149 is not deployed according to flight plans.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been deployed.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) Partial loss of data from Scientific Airlock Experiment 149.	b) Install experiment on other side of the OWS inform ground of discrepancy.	b) Deploy experiment on other side of OWS upon crew request.	b) IIIb	
Relay, momentary, AM/OWS SAL 1D(2B) - off isolation (K4-91) (K4-97) 52-79703-1 (1 of 2) (Provides Ground capability to remove power from the Deployment circuitry of Scientific Airlock Exp. 149) 2.2.54 2.2.55	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to retract Scientific Airlock Exp. 149.	a) Scientific Airlock Exp. 149 is not retracted according to flight plans.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been retracted.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) Loss of data from Scientific Airlock Experiment 149.	b) Inform Ground of discrepancy.	b) None	b) IIIb	
Relay, momentary, AM/OWS SAL 1C(2C) - On isolation (K4-92) (K4-98) 52-79703-1 (Provides Ground capability to retract Scientific Airlock Exp. 149.) (1 of 2) 2.2.56 2.2.57	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to retract Scientific Airlock Exp. 149.	a) Scientific Airlock Exp. 149 is not retracted according to flight plans.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been retracted.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) Loss of data from Scientific Airlock Experiment 149.	b) Inform Ground of discrepancy.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, OWS TACS Trans Enable 2A(2B) - On isolation (K4-76) (K4-83) 52-79703-1 (1 of 2) (Provides Ground capability to transfer control of the TACS from OWS to ATM) 2.2.58 2.2.59	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to transfer control of TACS from OWS to ATM via TACS Transfer 2A(2B).	a) None	a) OWS T/M data will indicate that OWS TACS Transfer Enable 2A(2B) did not occur.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, due to redundancy provided by TACS Transfer 2A, 1B, and 2B(2A).	b) None	b) Perform transfer function by OWS TACS Transfer Enable 1A, 1B, or 2B(2A) via CRDU.	b) IIIb	
Relay, momentary, TACS Trans Enable 2A (2B) - Off isolation (K4-77) (K4-84) 52-79703-1 (1 of 2) (Provides Ground capability to inhibit the transfer of control of the TACS from OWS to ATM.) 2.2.60 2.2.61	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to inhibit OWS/TACS Transfer Enable 2A(2B)	a) None	a) OWS T/M data will indicate that OWS TACS Transfer is not in the inhibit mode.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
Relay, momentary, OWS TACS Bus 1(2) - On isolation (K4-78) (K4-85) 52-79703-1 (1 of 2) (Provides Ground capability to transfer the control of the TACS from OWS to ATM.) 2.2.62 2.2.63	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to transfer control of TACS from OWS to ATM via OWS TACS Bus 1(2). CRDU command.	a) None	a) OWS T/M data will indicate that OWS TACS Bus 1(2) is not on.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, due to redundancy provided by OWS TACS Bus 2(1).	b) None	b) Perform transfer via OWS TACS Bus 2(1) and associated circuitry controlled by CRDU.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, OWS TACS Bus 1(2) Off isolation (K4-79) (K4-86) 52-79703-1 (1 of 2) (Provides Ground capability to remove power from the OWS TACS Bus 1(2). 2.2.64, 2.2.65	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to remove power from OWS TACS Bus 1(2).	a) None	a) OWS T/M data will indicate that OWS TACS Bus 1 (2) is still powered.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required.)	
Relay, momentary, OWS TACS Trans 1 (2) isolation (K4-80) (K4-87) 52-79703-1 (1 of 2) (Provides Ground capability to transfer the control of the TACS from OWS to ATM.) 2.2.66, 2.2.67	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to transfer control of TACS from OWS to ATM via OWS TACS Transfer 1(2) CRDU command.	a) None	a) OWS T/M data will indicate that OWS TACS Transfer 1(2) did not occur.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, due to redundancy provided by CRDU command OWS TACS Transfer 2(1).	b) None	b) Perform transfer via CRDU command OWS TACS Transfer 2(1).	b) IIIb	
Relay, momentary, Pri(Sec.) Bus Arm Isolation (K4-114) (K4-115) 52-79703-1 (1 of 2) (Provides Ground capability to arm the Sequential Buses.) 2.2.68, 2.2.69	L M S	a) Coil fails open or Pole A fails open.	a) Loss of Ground capability to arm the Primary (Secondary) Sequential Bus.	a) None	a) T/M data will indicate that the Primary (Secondary) Sequential Bus is not powered.	a) N/A	—
		b) Defective terminal wire subjected to mechanical or thermal stress, or insulating films on contacts due to contamination.	b) None, due to redundancy provided the Secondary (Primary) Sequential Bus.	b) None	b) Continue mission using the Secondary (Primary) Sequential Bus.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, AM/OWS SAL 1C(2C) - off isolation (K4-93) (K4-99) 52-79703-1 (1 of 2) (Provides Ground capability to remove power from the retraction circuitry of Scientific Airlock Exp. 149) 2.2.70, 2.2.71	L M S	a) Coil fails open or Pole A fails open.	a) Loss of Ground capability to deploy Scientific Airlock Exp. 149 from the associated side of the OWS.	a) Scientific Airlock Exp. 149 is not deployed according to flight plans.	a) OWS T/M data will indicate that Scientific Airlock Exp. 149 has not been deployed.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) Partial loss of data from Scientific Airlock Exp. 149.	b) Install experiment on the other side of OWS and inform Ground of discrepancy.	b) Deploy experiment on other side of OWS upon Crew request.	b) IIIb	
Relay, momentary, OWS TACS TRANS ENABLE 1A(1B) isolation (K4-74) (K4-81) 52-79703-1 (Provides Ground capability to transfer control of the TACS from OWS to ATM.) (1 of 2) 2.2.72, 2.2.73	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to transfer control of TACS from OWS to ATM via TACS Transfer 1A (1B).	a) None	a) OWS T/M data will indicate that OWS TACS Transfer Enable 1A(1B) did not occur.	a) N/A	—
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, due to redundancy provided by TACS Transfer 2A, 2B, and 1B(1A).	b) None	b) Perform transfer function by OWS TACS Transfer Enable 2A, 2B, or 1B(1A) via CRDU.	b) IIIb	
Relay, momentary, OWS, TACS Trans Enable 1A(1b) off isolation (K4-75) (K4-82) 52-79703-1 (1 of 2) (Provides Ground capability to inhibit the transfer of control of the TACS from OWS to ATM.) 2.2.74, 2.2.75	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to inhibit OWS TACS Transfer Enable 1A(1B).	a) None	a) OWS T/M data will indicate that OWS TACS Transfer Enable 1A(1B) is not in the inhibit mode.	a) N/A	—
		b) Defective terminal wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, function is required only in event of power failure.	b) None	b) None	b) N/A (Multiple failures required.)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary ATM SAS Deploy A&B Arm Isolation (K4-59) 52-79703-1 (Provides Ground capability to arm SAS EBW Firing Units A&B via CRDU) 2.2.76	L	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film or contacts due to contamination. Pole B is a spare	a) Loss of capability to Arm the SAS EBW Firing Units A and B via CRDU. b) None, function is required only in the event of prior failure.	a) None b) None	a) T/M data will indicate that EBW Firing units A & B are not charged. b) Attempt function via OWS IU	a) N/A b) N/A (Multiple failures required)	--------
Relay, momentary ATM SAS Deploy A&B Reset Isolation 52-79703-1 (Provides Ground capability to reset the SAS EBW Firing Units A&B via CRDU) 2.2.77	L	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	a) Loss of capability to recharge the SAS EBW Firing Units A&B via CRDU. b) None, function is required only in the event of prior failure.	a) None b) None	a) T/M data will indicate that EBW Firing units A & B are not charged. b) Attempt function via OWS IU	a) N/A b) N/A (Multiple failures required)	--------
Relay, momentary ATM SAS Deploy Fire A Isolation (K4-61) 52-79703-1 (Provides Ground capability to fire SAS EBW Firing Unit A via CRDU) 2.2.78	L	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare	a) Loss of capability to fire SAS EBW Firing Unit A via CRDU. b) None, due to redundancy provided by SAS EBW Firing Unit B.	a) None b) None	a) T/M data will indicate that SAS EBW Firing Unit A is still charged. b) Perform function via SAS EBW Firing Unit B.	a) N/A b) IIIb	--------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary ATM SAS Deploy Fire B Isolation (K4-62) 52-79703-1 (Provides Ground capability to fire SAS EBW Firing Unit B via CRDU). 2.2.79	L	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	a) Loss of capability to fire SAS EBW Firing Unit B via CRDU. b) None, due to redundancy provided by SAS EBW Firing Unit A.	a) None b) None	a) T/M data will indicate that SAS EBW Firing Unit B is still charged. b) Perform function via SAS EBW Firing Unit A.	a) N/A b) IIIb	--------
Relay, momentary ATM SAS Wings Deploy 1 & 3 Isolation (K4-63) 52-79703-1 (Provides Ground capability to deploy SAS Wings 1 and 3 via CRDU) 2.2.80	L	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	a) Loss of capability to deploy SAS Wings 1 and 3 via CRDU. b) None, crew can manually deploy wings.	a) None b) Deploy SAS Wings 1 and 3 manually	a) T/M data will indicate that SAS Wings 1 and 3 are not deployed. b) Attempt function via OWS IU.	a) N/A b) IIIb	--------
Relay, momentary ATM SAS Wings Deploy 2 and 4 Isolation. (K4-64) 52-79703-1 (Provides Ground capability to deploy SAS Wings 2 and 4 via CRDU) 2.2.81	L	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	a) Loss of capability to deploy SAS Wings 2 and 4 via CRDU. b) None, crew can manually deploy the wings.	a) None b) Deploy SAS Wings 2 and 4 manually.	a) T/M data will indicate that SAS Wings 2 and 4 are not deployed. b) Attempt function via OWS IU.	a) N/A b) IIIb	--------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary ATM A&PCS On Isolation (K4-65) 52-79703-1 (Provides Ground capability to turn on ATM A&PCS via CRDU) 2.2.82	L	a) Coil fails open or Pole A fails open.	a) Loss of capability to turn on A&PCS via CRDU.	a) None	a) ATM T/M data will indicate function was not accomplished.	a) N/A	--------
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	b) None, function required only in event of prior failure.	b) None	b) Attempt function via IU.	b) N/A (Multiple failures required)	
Relay, momentary ATM Decoder & Rcvr. No. 2 Power Off Isolation (K4-127) 52-79703-1 (Provides Ground capability to turn ATM Decoder & Rcvr. No. 2 Off via CRDU) 2.2.83	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to turn off ATM Decoder and Rcvr. No. 2 via CRDU.	a) None	a) ATM T/M data will indicate that ATM Decoder and Rcvr 2 is still powered.	a) N/A	--------
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare	b) None, due to redundancy provided by ATM Decoder & Rcvr No. 1.	b) None	b) Perform function via ATM Decoder & Rcvr No. 1.	b) IIIb	
Relay, momentary ATM Decoder & Rcvr No. 1 Power off isolation. (K4-125) 52-79703-1 (Provides Ground capability to turn ATM Decoder & Rcvr No. 1 off via CRDU) 2.2.84	L M S	a) Coil fails green or Pole A fails green.	a) Loss of capability to turn off ATM Decoder & Rcvr No. 1 via CRDU.	a) None	a) ATM T/M data will indicate that ATM Decoder & Rcvr #1 is still powered.	a) N/A	--------
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film or contacts due to contamination. Pole B is a spare	b) None, due to redundancy provided by Decoder & Rcvr. No. 2.	b) None	b) Perform switching function via ATM Decoder & Rcvr No. 2.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary ATM Decoder & Rcvr No. 2 Power On Isolation. (K4-128) 52-79703-1 (Provides Ground capability to turn ATM Decoder & Rcvr No. 2 on via CRDU). 2.2.85	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to turn on ATM Decoder & Rcvr No. 2 via CRDU.	a) None	a) ATM T/M data will indicate that ATM Decoder & Rcvr #2 is not powered.	a) N/A	--------
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	b) None, due to redundancy provided by ATM Decoder & Rcvr No. 1.	b) None	b) Perform switching function via ATM Decoder & Rcvr #1.	b) IIIb	
Relay, momentary ATM Decoder & Rcvr No. 1 power on isolation. (K4-126) 52-79703-1 (Provides Ground capability to turn ATM Decoder & Rcvr No. 1 on via CRDU). 2.2.86	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to turn on ATM Decoder & Rcvr No. 1 via CRDU.	a) None	a) ATM T/M data will indicate that ATM Decoder & Rcvr #1 is not powered.	a) N/A	--------
		b) Defective terminal wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	b) None, due to redundancy provided by ATM Decoder & Rcvr No. 2.	b) None	b) Perform switching function via ATM Decoder & Rcvr #2.	b) IIIb	
Relay, momentary ATM Tape Recorder No. 1(2) Stop isolation. (K4-100) (K4-103) 52-79703-1 (1 of 2) (Provides Ground capability to stop ATM Recorder No. 1(2) via CRDU). 2.2.87 2.2.88	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to stop ATM tape recorder No. 1(2) via CRDU.	a) None	a) ATM T/M data will indicate that ATM tape recorder No. 1(2) has not stopped.	a) N/A	--------
		b) Defective terminal wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare	b) None, due to redundancy provided by ATM Decoder & Rcvrs.	b) None	b) Perform switching function via ATM Decoder & Rcvrs.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary ATM Tape Recorder No. 1 Record isolation (K4-101) (K4-104) 52-79703-1 (1 of 2) 2.2.89, 2.2.90 (Provides Ground capability to record on ATM Tape Recorder 1(2) via CRDU).	L M S	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination. Pole B is a spare.	a) Loss of capability to record on ATM tape recorder No. 1(2) via CRDU. b) None, due to redundancy provided by ATM Decoder & Rcvrs.	a) None b) None	a) ATM T/M data will indicate that ATM tape recorder No. 1(2) is not in the record mode. b) Perform switching function via ATM Decoder & Rcvrs.	a) N/A b) IIIb	--------
Relay, momentary ATM Tape Recorder No. 1(2) - Playback isolation (K4-102) (K4-105) 52-79703-1 (1 of 2) (Provides Ground capability to retrieve data recorded on ATM tape recorder No. 1(2) via CRDU). 2.2.91, 2.2.92	L M S	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress or insulating film on contacts due to contamination. Pole B is a spare.	a) Loss of capability to retrieve recorded data on ATM tape recorder No. 1(2) via CRDU. b) None, due to redundancy provided by ATM Decoder & Rcvrs.	a) None b) None	a) ATM T/M data will indicate that recorded data on ATM tape recorder No. 1(2) is not being retrieved. b) Perform switching function via ATM Decoder & Rcvrs.	a) N/A b) IIIb	--------
Relay, momentary ATM XMTR No. 1 (2) FWD ANT. isolation. (K4-106) (K4-108) 52-79703-1 (1 of 2) (Provides Ground capability to connect ATM T/M transmitter 1(2) to the FWD ANT via CRDU). 2.2.93 2.2.94	L M S	a) Coil fails open or Pole A fails open. b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	a) Loss of capability to connect the ATM T/M transmitter No. 1(2) to the FWD Ant. via CRDU. b) None, due to redundancy provided by ATM Decoder & Rcvrs.	a) None b) None	a) ATM T/M data will indicate that ATM T/M transmitter No. 1 is not connected to the FWD Ant. b) Perform switching function via ATM Decoder & Rcvrs.	a) N/A b) IIIb	--------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary ATM XMTR No. 1(2) AFT Ant. isolation. (K4-107) (K4-109) 52-79703-1 (1 of 2) (Provides Ground capability to connect ATM T/M transmitters No. 1(2) to the AFT. Ant. via CRDU). 2.2.95 2.2.96	L M S	a) Coil fails open or Pole A fails open.	a) Loss of capability to connect the ATM T/M transmitter No. 1(2) to the AFT Ant. via CRDU.	a) None	a) ATM T/M data will indicate that ATM T/M transmitter No. 1 (2) is not connected to the AFT. Ant.	a) N/A	--------
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, due to redundancy provided by ATM Decoder & Rcvrs.	b) None	b) Perform switching function via ATM Decoder & Rcvrs.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching DCS Secondary Power (K4-40) 52-75703-53 (DCS Secondary Power Relay inhibits the CRIU reset command of the TR-30 Secondary DCS on Relay so that both the primary and Secondary DCS Receiver Decoder cannot be turned off.) 2.2.97	L M S	a) Latch coil fails open.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder and B side of the CRIU via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder is not powered.	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to redundancy provided by Electronic Timer TR-30 function.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR-30 function to turn on the Secondary DCS Receiver Decoder.	b) IIIb	
		a) Reset coil fails open.	a) None, function prevents an inadvertant CRIU command from powering down both DCS's.	a) None	a) None	a) N/A	
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, function required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
		a) Pole B fails open in reset position.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder and B side of the CRIU via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder is not powered.	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer TR-30 function.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR-30 function to turn on the Secondary DCS Receiver Decoder.	b) IIIb	
		a) Pole B fails open in latch position.	a) None, function prevents an inadvertent CRIU command from powering down both DCS's.	a) None	a) None	a) N/A	
		b) Insulating film on contacts due to contamination.	b) None, function required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching DCS Secondary Power (K4-40) 52-79703-53 (Continued)	L M S	a) Pole C fails open in the latch position.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder and "B" side of the CRDU via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder is not powered.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer TR-30 function.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR-30 function to turn on the Secondary DCS Receiver Decoder.	b) IIIb	
		a) Pole D fails open in the latch position.	a) Loss of Ground capability to reset the TR-30 Secondary DCS on Relay.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder and "B" side of CRDU is still powered after CRDU Command S280.	a) N/A	----------
		b) Insulating film on contacts due to contamination. Pole A is used for GSE only. Pole E and F are spares.	b) None, function required only in event of prior failure.	b) None	b) Continue mission using the Secondary DCS Receiver Decoder and "B" side of the CRDU.	b) N/A (Multiple failures required)	
Relay, DCS Secondary Power Control (K4-41) 52-79715-11 (Controls the switching of the DCS Secondary Power Relay.) 2.2.98	L M S	a) Coil fails open.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder and "B" side of the CRDU via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder is not powered.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None due to redundancy provided by Electronic Timer TR-30 function.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR-30 function to turn on the Secondary DCS Receiver Decoder and "B" side of CRDU.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, DCS Secondary Power Control (K4-41) 52-79715-11 (Continued)	L M S	a) Pole A fails open.	a) Loss of Ground capability to turn on the Secondary DCS Receiver Decoder and "B" side of the CRDU via the Primary DCS Receiver Decoder.	a) None	a) T/M data will indicate that the Secondary DCS Receiver Decoder is not powered.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by Electronic Timer TR-30 function.	b) Select the "SEC" position of the Command System Switch if requested by Ground.	b) Request crew to select the "SEC" position of the Command System Switch or allow the Electronic Timer TR-30 function to turn on the Secondary DCS Receiver Decoder and "B" side of CRDU.	b) IIIb	
		a) Pole B fails open.	a) None, function prevents an inadvertent CRDU command from powering down both DCS's.	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, function required only in event of prior failure.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Salvo Control #1(2) (K4-129) (4-130) 52-79703-1 2.2.99 2.2.100 (Provides the salvo command from the Electronic Timers to the Primary and Secondary DCS's)	L M S	a) Coil fails open.	a) Loss of the salvo command from the Secondary Primary Electronic Timer to the DCS.	a) None	a) T/M transmitter will remain on after scheduled shut down after passing over a ground station.	a) N/A	-----
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary (Secondary) Electronic Timer.	b) None	b) Select the Primary (Secondary) Electronic Timer and continue the mission.	b) IIIb	
		a) Pole A(B) fails open.	a) Loss of the salvo command from the Secondary (Primary) Electronic Timer to the Secondary (Primary) DCS.	a) None	a) T/M transmitter will remain on after scheduled shut down from passing over a ground station.	a) N/A	-----
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary (Secondary) Electronic Timer.	b) None	b) Select the Primary (Secondary) Electronic Timer and continue the mission.	b) IIIb	
		a) Pole B(A) fails open.	a) Loss of the salvo command from the Secondary (Primary) Electronic Timer to the Primary (Secondary) DCS.	a) None	a) T/M transmitter will remain on after scheduled shut down after passing over a ground station.	a) N/A	-----
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary (Secondary) Electronic Timer.	b) None	b) Select the Primary (Secondary) Electronic Timer and continue the mission.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker Magnetic, C&W System Converters C & W 1. (11-3) 52-79721-320 2.3.01 (Provides circuit protection for EPS Control Bus 1 power circuitry to the Caution and Warning Subunit #1).	M	a) Opens before break current is exceeded.	a) Loss of Caution and Warning Subunit #1.	a) Caution and Warning Subunit #2 "C&W Power" I.D. light will lite and audio Caution Tone will be generated. Bat handle will be in the "off" position.	a) T/M data will indicate a "Caution" on C&W Subunit #2 and not on C&W Subunit #1. T/M data of 5V logic and 28V Control voltage of C&W Subunit #1 is OV.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None due to redundancy provided by Caution and Warning Subunit #2.	b) Isolate discrepancy to C&W Subunit #1 and select the "Inhibit" position of C&W Power 1 Inhibit Switch.	b) Inform crew of discrepancy.	b) IIIb	
Circuit Breaker Magnetic, C&W System Converters C&W 2. (11-4) 52-79721-320 2.3.02 (Provide circuit protection for EPS Control Bus 2 power circuitry to the Caution and Warning Subunit #2)	M	a) Opens before break current is exceeded.	a) Loss of Caution and Warning Subunit #2.	a) Caution and Warning Subunit #1 "C&W Power" I.D. Light will lite and an audio Caution Tone will be generated. Bat handle will be in the "off" position.	a) T/M data will indicate a "Caution" on C&W Subunit #1 and not on C&W Subunit #2. T/M data 5V logic and 28V control voltage of C&W Subunit #2 is OV.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Caution and Warning Subunit #1.	b) Isolate discrepancy to C&W Subunit #2 and select the "Inhibit" position of C&W Power 2 Inhibit Switch.	b) Inform crew of discrepancy.	b) IIIb	
Circuit Breaker Magnetic, C&W System Converters Emerg. 1. (11-1) 52-79721-320 2.3.03 (Provides circuit protection for EPS Control Bus 1 power circuitry to the Caution & Warning Emergency Subunit #1).	M	a) Opens before break current is exceeded.	a) Loss of Emergency Subunit #1.	a) Caution and Warning "Emerg. Power" I.D. light will lite and an audio Caution Tone. Bat handle will be in the "Off" position.	a) T/M data will indicate a "Caution" on the C&W Subunits 1 and 2. T/M data 5V logic and 28V control voltage of Emerg. subunit #2 is OV.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Emerg. Subunit #2.	b) Isolate failure to Emerg. Subunit #1 and select the "Inhibit" position of "Emerg. Power 1" Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	n) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, C&W System Converter Emerg. 2 (11-2) 52-79721-320 2.3.04 (Provides circuit protection for EPS Control Bus power circuitry to the C&W Emergency Subunit #2.)	M	a) Opens before break current is exceeded.	a) Loss of Emergency Subunit #2.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone. bat handle will be in the "off" position. b)	a) T/M data will indicate a "Caution" on the C&W Subunits 1 and 2. T/M data 5V logic and 28V control voltage of Emerg. Subunits 1 and 2 is 0V.	a) N/A	- - - - - - - - -
		b) Internal defect coil shorts to ground.	b) None, due to redundancy provided by Emergency Subunit #1.	b) Isolate failure to emergency Subunit #2 and select the "Inhibit" position of Emerg. power to Inhibit Switch.	b) Maintains system surveilance. Alert crew if during sleep period	b) IIIb	
Circuit Breaker, Magnetic, C&W System Sensors - EMERG-1 (11-5) 52-79721-320 2.3.05 (Provides circuit protection for EPS Control Bus 1 power circuitry for Rapid ΔP/ΔT Sensor #1 and fire sensors.)	M.	a) Opens before break current is exceeded.	a) Loss of EPS Control Bus 1 power to fire sensors and Rapid Δ P/ Δ T Sensor #1.	a) C&W "Emerg. Sensor Power light will lite and an audio Caution Tone. The circuit breakers bat handle will be in the "off" position.	a) T/M data will indicate a "Caution" on the C&W Subunits 1 and 2.	a) N/A	- - - - - - - - -
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by EPS Control Bus 2 power to fire sensors and to Rapid Δ P/Δ T Sensor #2.	b) Select the "Inhibit" position of Emerg. Sensor #1 Inhibit Switch. Power all fire sensors from EPS Control Bus 2.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
Circuit Breaker, Magnetic, C&W System Sensors - Emerg. 2 (11-6) 52-79721-320 2.3.06 (Provides circuit protection for EPS Control Bus 2 power circuitry for Rapid ΔP/ΔT Sensor #2 and fire sensors.)	M	a) Opens before breaks current is exceeded.	a) Loss of EPS Control Bus 2 power to fire sensors and Rapid ΔP/ΔT Sensor #2.	a) C&W "Emerg. Sensor Power I.D. light will lite and an audio Caution Tone. The circuit breaker's bat handle will be in the "off" position.	a) T/M data will indicate a "Caution" on the C&W Subunits 1 and 2.	a) N/A	- - - - - - - - -
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by EPS Control Bus 1 power to fire sensor and to Rapid ΔP/ΔT sensor #1.	b) Select the "Inhibit" position of Emerg. Sensor #2 Inhibit Switch. Power all fire sensors from EPS Control Bus1	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, C&W System Converters Sig/Cond. 1. (11-13) 52-79721-320 2.3.07 (Provides circuit protection for EPS Control Bus 1 power circuitry for C&W Sign. Cond. Pri. Display Conv., Relay power for Instrumentation Package 1, and manual reset circuitry for reset of Crew Alert Relay #1.	M	a) Opens before break current is exceeded. b) Internal defect coil shorts to ground.	a) Loss of Relay Power for Instrumentation Package 1 C&W Sig. Cond. Pri. Display Conv., capability to provide sensor power from AM BUS 1 & 2 via C&W Sensor Power Relay #1 and manual capability to reset the Crew Alert Relay #1. b) None, due to redundancy provided by Instrumentation Package 2 C&W Sig. Cond. Sec. Display Conv., DCS capability to provide sensor power from AM Buses 1 & 2 via C&W Sensor Power Relay #2 and to reset Crew Alert Relay #1.	a) C&W Submit 2 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated. The circuit breaker's bat handle will be in the "Off" position. b) Select the "Inhibit" position of the C&W Signal Cond. Inhibit Switch. Inform Ground of discrepancy.	a) T/M data will indicate a "Caution" on the C&W System. b) Maintain system surveillance. Alert crew if during a sleep period. Reset crew alert Relay #1 via DCS.	a) N/A b) IIIb	- - - - - - - - -
Circuit Breaker, Magnetic, Caution and Warning System Converters Sig/Cond. 2. (11-14) 52-79721-320 2.3.08 (Provides circuit protection for EPS Control Bus 2 power circuitry for C&W Sig. Cond. Sec. Display Conv., Relay power for Instrumentation Package 2, and manual reset circuitry for reset of Crew Alert Relay #2).	M	a) Opens before break current is exceeded. b) Internal defect, coil shorts to ground.	a) Loss of C&W Sig. Cond. Sec. Display Conv., Relay power for Instrumentation Package 2, capability to provide C&W sensor power from AM Bus 1 & 2 via C&W Sensor Power Relay #2, and manual capability to reset the Crew Alert Relay #2. b) None, due to redundancy provided by C&W Sig. Cond. Pri. Display Conv. Instrumentation Package 1, capability to provide C&W sensor power from AM Buses 1 & 2 via C&W Sensor Power Relay #1, and DCS capability to reset Crew Alert Relay #2.	a) C&W Subunit 1 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated. The circuit breaker's bat handle will be in the 'Off" position. b) Select the "Inhibit" position of the C&W Signal Cond. Inhibit Switch.	a) T/M data will indicate a "Caution" on the C&W System. b) Maintain system surveillance. Alert crew if during a sleep period. Reset crew alert Relay #2 via DCS.	a) N/A b) IIIb	- - - - - - - - -

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, C&W System Tone Amp. C&W 1 (11-21) 52-79721-322 2.3.09 (Provides circuit protection for EPS Control Bus 1 circuitry for Subunit 1 of the C&W High Level Audio Amplifier).	M	a) Opens before break current is exceeded. b) Internal defect, coil shorts to ground.	a) Loss of Subunit 1 of the C&W High Level Audio Amplifier. b) None, due to redundancy provided by Subunit 2 of C&W High Level Audio Amplifier and by the electronics of the Speaker Intercom Assemblies.	a) The circuit breaker bat handle will be in the "Off" position. b) Increase volume of C&W tones if required.	a) None b) None	a) N/A b) IIIb	- - - - - - - - - -
Circuit Breaker, Magnetic, C&W System - Tone Amp. - C&W 2 (11-22) 52-79721-322 2.3.10 (Provides circuit protection for EPS Control Bus 2 circuitry for Sub-unit 2 of the C&W High level Audio Amplifier.)	M	a) Opens before break current is exceeded. b) Internal defect, coil shorts to ground.	a) Loss of Subunit 2 of the C&W High Level Audio Amplifier. b) None, due to redundancy provided by Subunit 1 of C&W High Level Audio Amplifier and by the electronics of the Speaker Intercom Assemblies.	a) The circuit breaker bat handle will be in the "Off" position. b) Increase the volume of the C&W tones if required.	a) None b) None	a) N/A b) IIIb	- - - - - - - - - -

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, C&W System Sensors - C&W 1 (11-23) 52-79721-322 2.3.11 (Provides circuit protection for AM Bus 1 circuitry for C&W Cluster Low Pressure Sensor 1, Molecular Sieve A&B Gas Flowmeter-Sec. Fan, OWS Gas Flowmeter Converter, Condensate Tank ΔP Sensor, and EVA Sensor 1 Power & Control Relays)	M	a) Opens before break current is exceeded.	a) Loss of AM Bus 1 power to 1. Cluster Low Pressure Sensor 1, 2. Molecular Sieve A&B Gas Flowmeter - Sec. Fan, 3. OWS Gas Flowmeter Converter, and 4. Condensate Tank ΔP Sensor 5. EVA Sensor 1 Power Relay and EVA Sensor Power Control Relay.	a) Circuit Breaker's bat handle will be in the "off" position. Condensate ΔP will not activate the C&W System during normal dump operation. Normal turn on of EVA LCG 1 ΔPump will not activate the C&W System.	a) None	a) N/A	- - - - - - - - - -
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Cluster Low Pressure Sensor 2, and T/M Data for Condensate Tank ΔP, Molecular Sieve ΔP.	b) Increase surveillance of associated systems. Turn Sieve A&B Fans to PRI position. Inform Ground of discrepancies.	b) Increase surveillance of associated systems via T/M upon crew request.	b) IIIb	
Circuit Breaker, Magnetic, C&W System Sensor C&W (11-24) 52-79721-322 2.3.12 (Provides circuit protection for AM Bus 2 circuitry for C&W Cluster Low Pressure Sensor 2, Molecular Sieve A&B Gas Flowmeter Pri. Fan, and EVA Sensor 2 Pwr. and Control Relays.)	M	a) Opens before break current is exceeded.	a) Loss of AM Bus 2 power to C&W Cluster Low Pressure Sensor 2, Molecular Sieve A&B Gas Flowmeter - Pri. Fan, and EVA Sensor 2 Pwr Relay and EVA Sensor Pwr Control Relay.	a) Circuit Breaker's bat handle will be in the "off" position. Normal turn on of EVA LCG 2 ΔP Pump will not activate the C&W System.	a) None	a) N/A	- - - - - - - - - -
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Cluster Low Pressure Sensor 1 and T/M Data for Molecular Sieve ΔP.	b) Increase surveillance of the associated systems. Turn Sieve A&B Fans to Sec. position. Inform Ground of discrepancy.	b) Increase surveillance of associated systems via T/M upon crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System - Power Caution and Warning 52-79705-101 2.3.12 (Provides manual capability to turn the C&W System On and Off.)	M	a) Contact set (2,1) fails open in "off" position.	a) Loss of capability to reset C&W Sensor Power Relay #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to adequate power provisions and circuit protection provided by associated circuit breakers.	b) None	b) None	b) IIIb	
		a) Contact set (2,3) fails open in "on" position.	a) Loss of C&W Sig. Cond. Sec. Display Conv., Relay power for Instrumentation Package 2 capability to provide C&W sensor power from AM Bus 1 & 2 via C&W Sensor Power Relay #2 and manual capability to Reset the Crew Alert Relay #2.	a) C&W Subunit 2 "C&W Power I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunit #1.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by C&W Sig. Cond. Pri. Display Conv., Instrumentation Package, Capability to provide C&W sensor power from AM Buses 1 & 2 via C&W Sensor Power Relay #1, and DCS capability to reset Crew Alert Relay #2.	b) Select the "Inhibit" position of the C&W Signal Cond. Inhibit Switch. Inform Ground of discrepancy.	b) Maintain system surveillance. Alert crew if during a sleep period. Reset crew Alert Relay #2 via DCS upon crew request.	b) IIIb	
		a) Contact set (5,4) fails open in the "off" position.	a) Loss of capability to reset C&W Sensor Power Relay #1.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to adequate power provisions and circuit protection provided by the associated circuit breakers.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System - Power-Caution and Warning 52-79705-101 (continued)		a) Contact set (5, 6) fails open in the "on" position.	a) Loss of Relay power for Instrumentation Package 1, C&W Sig. Cond. Pri. Display Conv., capability to provide C&W sensor power from AM Bus 1 & 2 via C&W Sensor Power Relay #1, and manual capability to reset Crew Alert Relay #1.	a) C&W Subunit 1 "C&W Power I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunit #1.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by Instrumentation Package 2, C&W Sig. Cond. Sec. Display Conv., capability to provide C&W sensor power from AM Bus 1 & 2 via C&W Sensor Power Relay #2, and DCS capability to reset Crew Alert Relay #1.	b) Select the "Inhibit" position of the C&W Signal Inhibit Switch. Inform Cond. of discrepancy.	b) Maintain system surveillance. Alert crew if during a sleep period. Reset crew Alert Relay #1	b) IIIb	
		a) Contact set (8, 9) fails open in the "on" position.	a) Loss of Caution and Warning Subunit #1.	a) Caution and Warning Subunit #2 "C&W Power" I.D. lights will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunit #2. T/M data of 5v. logic and 28V control voltage of C&W Subunit #1 is OV.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by Caution and Warning Subunit #2.	b) Isolate power failure to C&W Subunit #1 and select the "Inhibit" position of C&W Power 1 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		a) Contact set (11, 12) fails open in the "on" position.	a) Loss of Caution and Warning Subunit #2.	a) Caution and Warning Subunit #1 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunit #1. T/M data of 5v. logic and 28V control voltage of C&W Subunit #2 is OV.	a) N/A	- - - - - - - - -
		b) Contamination. Contact sets (8, 7) and (11,10) are spares.	b) None, due to redundancy provided by Caution and Warning Subunit #1.	b) Isolate power failure to C&W Subunit #2 and select the "Inhibit" position of the C&W Power 2 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, Caution and Warning System Test - Caution 52-79705-21 2.3.13 (Provides capability to test the Caution electronics of the C&W Unit.)	M	a) Contact set (8,9) fails open in the "1" position.	a) Loss of capability to test the Caution electronics of C&W Subunit #1.	a) When switch is placed in the "1" position C&W Subunit #1 Caution I.D. lights do not lite, and there is no audio Caution Tone from Subunit #1.	a) T/M data of C&W Subunit #1 and #2 logic and control voltage is OV.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, crew can verify system's basic integrity by checking several Caution channels. C&W Subunit #2 Caution electronics is still capable of being tested.	b) Check several individual Caution channels with self-test capability to verify basic system integrity. Test C&W Subunit #2 to assure proper operation.	b) Inform crew of descrepency.	b) IIIb	
		a) Contact set (11,10) fails open in the "2" position.	a) Loss of capability to test the Caution electronics of C&W Subunit #2.	a) When switch is placed in the "2" position, C&W Subunit #2 Caution I.D. lights do not lite, and there is no audio Caution Tone from Subunit #2.	a) T/M data of C&W Subunit #1 and #2 logic and control voltage is OV.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, crew can verify system's basic integrity by individually checking several Caution channels. C&W Subunit #1 Caution electronics is still capable of being tested	b) Check several individual Caution channels with self-test capability to verify basic system integrity. Test Subunit #1 to assure that it is functioning properly.	b) Inform crew of descrepency.	b) IIIb	
		a) Contact set (8, 9) fails open in the "off" position.	a) Loss of Caution and Warning Subunit #1.	a) C&W Subunit #2 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunit #2.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by C&W Subunit #2.	b) Isolate power failure to C&W Subunit #1 and select the "Inhibit" position of C&W Power 1 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		a) Contact set (11, 10) fails open in the "off" position.	a) Loss of C&W Subunit #2.	a) C&W Subunit #1 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunit #1.	a) N/A	
		b) Contamination. Contact sets (2, 1) (5,6) (8,7) and (11,12) are spares.	b) None, due to redundancy provided by C&W Subunit #1.	b) Isolate power failure to C&W Subunit #2 and select the "Inhibit" position of C&W Power 2 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle, Caution and Warning System Test Caution 52-79705-21 (Continued)	M	a) Contact set (2,3) fails open in the "1" position.	a) Loss of capability to test the Caution electronics of C&W Subunit #1.	a) When the switch is placed in the "1" position only C&W Subunit #1 "C&W Power" I.D. light lites and a Caution Tone.	a) None	a) N/A	----------
		b) Contamination.	b) None, crew can verify system's basic integrity by checking several Caution channels. C&W Subunit #2 Caution electronics is still capable of being tested.	b) Check several individual Caution channels with self-test capability to verify basic system integrity. Test C&W Subunit #2 to assure proper operation.	b) None	b) IIIb	
		a) Contact set (5,4) fails open in the "2" position.	a) Loss of capability to test the Caution electronics of C&W Subunit #2.	a) When the switch is placed in the "2" position only C&W Subunit #2"C&W Power" I.D. light lites and a Caution Tone.	a) None	a) N/A	----------
		b) Contamination.	b) None, crew can verify system's basic integrity by checking several Caution channels. C&W Subunit #1 Caution electronics is still capable of being tested.	b) Check several individual Caution channels with self-test capability to verify basic system integrity. Test C&W Subunit #1 to assure proper operation.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, Caution and Warning System - Test - Warning 52-79705-21 2.3.14 (Provides capability to test the Warning electronics of the C&W Unit.)	M	a) Contact set (8,9) fails open in the "1" position.	a) Loss of capability to test the Warning electronics of C&W Subunit #1.	a) When switch is placed in the "1" position C&W Subunit #1 Warning I.D. lights do not lite, and there is no audio Warning Tone from Subunit #1.	a) T/M data of C&W Subunit #1 and #2 logic and control voltage is OV.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, crew can verify system's basic integrity by checking several Warning channels. C&W Subunit #2 Warning electronics is still capable of being tested.	b) Check several individual Warning parameters with self-test capability to verify basic system integrity Test C&W Subunit #2 to assure proper operation.	b) Inform crew of discrepancy.	b) IIIb	
		a) Contact set (11,10) fails open in the "2" position.	a) Loss of capability to test the Warning electronics of C&W Subunit #2.	a) When switch is placed in the "2" position C&W Subunit #2 Warning I.D. lights do not lite, and there is no audio Warning Tone from Subunit #2.	a) T/M data of C&W Subunit #1 and 2 logic and control voltage is OV.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, crew can verify system's basic integrity by checking several Warning channels. C&W Subunit #1 Warning electronics is still capable of being tested.	b) Check several individual Warning parameters with self-test capability to verify basic system integrity. Test C&W Subunit #1 to assure proper operation.	b) Inform crew of discrepancy.	b) IIIb	
		a) Contact set (8, 9) fails open in the "off" position.	a) Loss of C&W Subunit #1.	a) C&W Subunit #2 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunit #2.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by C&W Subunit #2.	b) Isolate power failure to C&W Subunit #1 and select the "Inhibit" position of C&W Power 1 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		a) Contact set (11, 10) fails open in the "off" position.	a) Loss of C&W Subunit #2.	a) C&W Subunit #1 "C&W Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunit #1.	a) N/A	- - - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by C&W Subunit #1.	b) Isolate power failure to C&W Subunit #2 and select the "Inhibit" position of C&W Power 2 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		Contact sets (2, 1), (5,6), (8, 7,) and (11,12) are spares.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle, Caution and Warning System Test - Warning 52-79705-21 (Continued)	M	a) Contact set (2, 3) fails open in the "1" position.	a) Loss of capability to test the Warning electronics of C&W Subunit #1.	a) When the switch is placed in the "1" position only C&W Subunit #1 "C&W Power" I.D. light lites and a Caution Tone.	a) None	a) N/A	----------
		b) Contamination	b) None, crew can verify system's basic integrity by checking several Warning channels. C&W Subunit #2 Warning electronics is still capable of being tested.	b) Check several individual warning parameters with self-test capability to verify basic system integrity test C&W Subunit #2 to assure proper operation.	b) None	b) IIIb	
		a) Contact set (5, 4) fails open in the "2" position.	a) Loss of capability to test the Warning electronics of C&W Subunit #2.	a) When the switch is placed in the "2" position only C&W subunit #2 "C&W Power" I.D. light lites and a Caution Tone.	a) None	a) N/A	----------
		b) Contamination	b) None, crew can verify system's basic integrity by checking several Warning channels. C&W Subunit #1 Warning electronics is still capable of being tested.	b) Check several individual Caution channels with self-test capability to verify basic system integrity. Test C&W Subunit #2 to assure proper operation.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Power-Emergency 1. 52-79705-1 2.3.15 (Provides capability to turn Emergency Subunit #1 on and off.)	M	a) Contact set (2, 3) fails open in the "on" position.	a) Loss of Emergency Subunit #1.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunit #1 and 2.	a) N/A	- - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by Emergency Subunit #2.	b) Isolate failure to Emergency Subunit #1 and select the "Inhibit" position of Emerg. Power 1 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
	M	a) Contact set (5,6) fails open in the "on" position.	a) Loss of EPS Control Bus 1 power to fire sensors and ΔP/ΔT sensor #1.	a) C&W "Emerg. Sensor Power I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunits #1 & 2.	a) N/A	- - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by EPS Control Bus 2 power to fire sensors and to RapidΔP/ΔT Sensor #2.	b) Select the "Inhibit" position of Emerg. Sensor #1 Inhibit Switch. Power all fire sensors from EPS Control Bus 2.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		Contact sets (2, 1) and (5,4) are spares.					
Switch, toggle, C&W System, Power-Emergency 2 52-79705-1 2.3.16 (Provides capability to turn Emergency Subunit #2 on and off.)	M	a) Contact set (2,3) fails open in the "on" position.	a) Loss of Emergency Subunit #2.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunits #1 & 2.	a) N/A	- - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by Emergency Subunit #1.	b) Isolate failure to Emergency Subunit #2 and select the "Inhibit" position of Emerg. Power 2 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		a) Contact set (5, 6) fails open in the "on" position.	a) Loss of EPS Control Bus 2 power to fire sensors and ΔP/ΔT sensor #2.	a) C&W "Emerg. Sensor Power I.D. light will lite and an audio Cautior Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunits #1 & 2.	a) N/A	- - - - - - - -
		b) Contamination.	b) None, due to redundancy provided by EPS Control Bus 1 power to fire sensors and Rapid ΔP/ΔT Sensor #1.	b) Select the "Inhibit" position of Emerg. Sensor #2 Inhibit Switch. Power all fire sensors from EPS Control Bus #1.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		Contact sets (2, 1) and (5,4) are spares.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle, C&W System Test ΔP 52-79705-21 2.3.17	M	a) Contact set (2, 3) fails open in the "1" position.	a) Loss of capability to test RapidΔP Sensor 1 in the "1" position and associated input electronics of Emerg. Subunit #1.	a) When the RapidΔP/2 switch is in the "Inhibit"Position C&W Unit does not respond to simulated RapidΔP.	a) T/M data will indicate that RapidΔP Sensor 1 is inoperative and Emerg. Subunit #2 logic and control voltage is OV.	a) N/A	----------
		b) Contamination	b) None, due to capability to verify proper operation of RapidΔP Sensor 1 and Emerg. Subunit #2.	b) Verify proper operationΔP Sensor 1 and Emerg Subunit #2.	b) Inform crew of discrepancy.	b) IIIb	
(Provides the capability to test the ΔP/ΔT electronics of the C&W Unit)		a) Contact set (5, 4) fails open in the "2" position.	a) Loss of capability to test RapidΔP Sensor 2 in the "2" position and associated input electronics of Emerg. Subunit #2.	a) When the RapidΔP 1 Switch is in the "Inhibit" position, C&W Unit does not respond to simulated rapidΔP.	a) T/M data will indicate that RapidΔP Sensor 2 is inoperative and Emerg. Subunit #1 logic and control voltage is OV.	a) N/A	----------
		b) Contamination	b) None, due to capability to verify proper operation of RapidΔP Sensor 2 and Emerg. Subunit #1.	b) Verify proper operation of RapidΔP Sensor 2 and Emerg. Subunit #1.	b) Inform crew of discrepancy.	b) IIIb	
		a) Contact set (8, 7) fails open in the "2" position.	a) Loss of capability to test RapidΔP Sensor 1 in the "2" position and associated input electronics of Emerg. Subunit #2.	a) When the RapidΔP 1 Switch is in the "Inhibit"position. C&W Unit does not respond to simulated rapidΔP.	a) T/M data will indicate that RapidΔP Sensor 1 is inoperative and Emerg Subunit #1 logic and control voltage is OV.	a) N/A	----------
		b) Contamination	b) None, due to capability to verify proper operation of RapidΔP Sensor 1 and Emerg. Subunit #1.	b) Verify proper operation of RapidΔP Sensor 1 and Emerg. Subunit #1.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, Toggle C&W System Test ΔP 52-79705-21 (Continued)	M	a) Contact set (11, 12) fails open in the "1" position.	a) Loss of capability to test Rapid ΔP Sensor 2 in the "1" position and associated input electronics of Emerg. Subunit #1.	a) When the Rapid ΔP 2 Switch is in the "Inhibit" Position, C&W Unit does not respond to simulated rapid ΔP.	a) T/M data will indicate that Rapid ΔP Sensor 2 is inoperative and Emerg. Subunit #2 logic and control voltage is OV.	a) N/A	----------
		b) Contamination	b) None, due to capability to verify proper operation of Rapid ΔP Sensor 2 and Emerg. Submit #2.	b) Verify proper operation of Rapid ΔP Sensor 2 and Emerg. Subunit #2.	b) Inform crew of discrepancy.	b) IIIb	
	M	a) Contact set (8, 9) fails open in the "off" position.	a) Loss of Emergency Subunit #1.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on the C&W Subunits 1 and 2. T/M data will indicate the Emerg. Subunit #1 logic and control voltage is OV.	a) N/A	----------
		b) Contamination	b) None, due to redundancy provided by Emerg. Subunit #2.	b) Isolate failure to Emerg. Subunit #1 and select the "Inhibit" position of Emerg. Power 1 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		a) Contact sets (11,12) fails open in the "off" position.	a) Loss of Emergency Subunit #2.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunits #1 and 2.	a) N/A	----------
		b) Contamination	b) None, due to redundancy provided by Emerg. Subunit #2.	b) Isolate failure to Emerg. Subunit #2 and select the "Inhibit position of Emerg. Power 2 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		Contact sets (2,1) and (5,6) are spares.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System - Test Fire 52-79705-21 2.3.18 (Provides capability to test the fire electronics of the C&W Unit.)	M	a) Contact set (2, 3) fails open in the "1" position.	a) Loss of capability to test the fire electronics of Emerg. Subunit #1.	a) When the switch is placed in the "1" position Emerg. Subunit #1 fire I.D. lights do not lite and there is no Emerg. Fire Tone.	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to capability to test Emerg. Subunit #1 electronics via individual Fire sensors.	b) Test Emerg. Subunit #2 to assure that it is functioning properly.	b) None	b) IIIb	
		a) Contact set (5, 4) fails open in the "2" position.	a) Loss of capability to test the fire electronics of Emerg. Subunit #2.	a) When the switch isplaced in the "2" position Emerg. Subunit #2 fire I.D. lights do not lite and there is no Emerg. Fire Tone.	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to capability to test Emerg. Subunit #2 electronics via individual Fire Sensors.	b) Test Emerg. Subunit #1 to assure that it is functioning properly.	b) None	b) IIIb	
		a) Contact set (8, 9) fails open in the "off" or "1" position.	a) Loss of Emergency Subunit #1.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunits #1 and 2. T/M data will indicate that Emerg. Subunit #2 logic and control voltage is 0V.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to redundancy provided by Emerg. Subunit #2.	b) Isolate failure to Emerg. Subunit #1 and select the "Inhibit" position of Emerg. Power 1 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	
		a) Contact set (11, 10) fails open in the "off" or "2" position.	a) Loss of Emerg. Subunit #2.	a) C&W "Emerg. Power" I.D. light will lite and an audio Caution Tone will be generated.	a) T/M data will indicate a "Caution" on C&W Subunits #1 and 2.	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to redundancy provided by Emerg. Subunit #1.	b) Isolate failure to Emerg. Subunit #2 and select the "Inhibit" position of Emerg. Power 2 Inhibit Switch.	b) Maintain system surveillance. Alert crew if during a sleep period.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, momentary, C&W System - Clear 52-79705-41 2.3.19 (Provides capability to clear the memory of the C&W Unit.)	M	a) Contact set (2, 1) fails open in the "Clear" position.	a) Loss of capability to clear the memory of C&W Subunit #2 via clear switch.	a) C&W Subunit #2 I.D. lights will remain on after selectirg the "clear" positior when Memory Recall switch is depressed.	a) None	a) N/A	- - - - - - - - -
		b) Contamination	b) None, C&W Subunit #2 can be cleared by cycling power off, than on.	b) Cycle C&W Subunit 2 off than on, via C&W Power Switch.	b) None	b) IIIb	
		a) Contact set (5, 4) fails open in the "clear" position.	a) Loss of capability to clear the memory of C&W Subunit #1. via clear switch.	a) C&W Subunit #1 I.D. lights will remain on after selecting the "clear"position when memory recall switch is depressed.	a) None	a) N/A	- - - - - - - - -
		b) Contamination Contact sets (2, 3) and (5,6) are spares.	b) None, C&W Subunit #1 can be cleared by cycling power off, than on.	b) Cycle C&W subunit #2 off than on via C&W Power switch.	b) None	b) IIIb	
Switch, momentary telelight, C&W System-Master Alarm Telelight. 52-79710-797 2.3.20 (Provides capability to reset the Caution, Warning, and Emergency Tones.)	M	a) Contact set (7, 8) or (9,10) fails open in the "Reset" position.	a) Loss of capability to reset the Caution and Warning audio Tones via C&W Master Alarm Telelight Switch.	a) When the "Reset" position is selected, the Caution and Warning Audio Tones remain.	a) None	a) N/A	- - - - - - - - -
		b) Contamination	b) None, due to redundancy provided by OWS Master Alarm Telelight Switch and the Test Reset Switch on the Fire Sensor Control Panels.	b) Perform switching function via the OWS Master Alarm Telelight Switch or the Test/Reset Switch on the Fire Sensor Control Panels.	b) None	b) IIIb	
		a) Contact set (11, 12) or (13, 14) fails open in the "Reset" position.	a) Loss of capability to reset the Emergency Audio Tones via C&W Master Alarm Telelight Switch.	a) When the "Reset" position is selected the Emergency Audio Tones remain.	a) None	a) N/A	- - - - - - - - -
		b) Contamination	b) None, due to redundancy provided by OWS Master Alarm Telelight Switch and the Test/ Reset Switch on the Fire Sensor Control Panels.	b) Perform switching function via the OWS Master Alarm Telelight Switch or the Test/Reset Switch on the Fire Sensor Control Panels.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, momentary telelight, C&W System-Master Alarm Telelight 52-79710-797 (continued)		a) Loss of indicator light (1 of 4)	a) None, due to redundant lights	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal over-stress.	b) None	b) None	b) None	b) IIIb	
Switch, momentary telelight, C&W System - Memory Recall Telelight 52-79710-799 2.3.21 (Provides capability to recall information in the memory of the C&W Unit.)	M	a) Contact set (7, 8) fails open in "Memory Recall" position.	a) Loss of capability to recall information from memory of C&W Subunit #1.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Contamination	b) None, due to redundancy provided by C&W Subunit #2.	b) None	b) None	b) IIIb	
		a) Contact set (9, 10) fails open in the "Memory Recall" position.	a) Loss of capability to recall information from memory of C&W Subunit #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Contamination Contact sets (11, 12) and (13,14) are spares.	b) None, due to redundancy provided by C&W Subunit #1.	b) None	b) None	b) IIIb	
		a) Loss of an indicator light. (1 of 4)	a) None, due to redundant lights	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal over-stress.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Master Alarm Reset #1 (K11-13) 62-79703-43 2.3.22 (Provides capability of resetting the C&W Unit via Test/Reset Switch on the Fire Sensor Control Panels.)	M	a) Coil fails open.	a) None, due to redundancy provided by Master Alarm Reset Relay #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None	b) None	b) None	b) IIIb	
		a) Contact set A, B, C, or D fails open.	a) None, due to redundancy provided by Master Alarm Reset Relay #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
Relay, Master Alarm Reset #2 (K11 - 14) 52-79703-43 2.3.23		a) Coil fails open.	a) None, due to redundancy provided by Master Alarm Reset Relay #1.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None	b) None	b) None	b) IIIb	
(Provides capability of resetting the C&W Unit via Test/Reset Switch on the Fire Sensor Control Panels).		a) Contact set A, B, C, or D fails open.	a) None, due to redundancy provided by Master Alarm Reset Relay #1.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching C&W Sensor Power Relay #1 (K11-3) 52-79703-53 2.3.24 (Provides capability to switch EPS Control Bus Power on and off to the High Level Audio Amplifier; and AM Bus Power on and off to the C&W Sensors.)	M	a) Latch coil fails open.	a) None, due to redundancy provided by C&W Sensor Power Relay #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal or thermal over-stress.	b) None	b) None	b) None	b) IIIb	
		a) Contact set C, D, E, or F fail open in the latch position.	a) None, due to redundancy provided by C&W Sensor Power Relay #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
		a) Contact set B fails open in the reset position.	a) None, due to redundancy provided by C&W Sensor Power Relay #2.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
		a) Contact set B fails open in the latch position or reset coil fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination or defective terminal or wire subjected to mechanical or thermal over-stress. Contact set A is used for GSE only.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching C&W Sensor Power #2. (K11-4) 52-79703-53 2.3.25 (Provides capability to switch EPS Control Bus Power on and off to the High Level Audio Amplifier, and AM Bus Power on and off to the C&W Sensors.)	M	a) Latch coil fails open.	a) None, due to redundancy provided by C&W Sensor power Relay #1.	a) None	a) None	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None	b) None	b) None	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
		a) Contact set B fails open in the latch position.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
		a) Contact set C, D, E, or F fails open in the latch position or B fails open in the reset position.	a) None, due to redundancy provided by C&W Sensor power Relay #1.	a) None	a) None	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination Contact set A is used for GSE only.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, slow release, C&W Sensor Power Control #1 (K11-5) 52-79715-13 2.3.26 (Controls the switching of C&W Sensor Power Relay #1.)	M	a) Coil fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus Power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal over-stress.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
		a) Contact set A fails open.	a) None, due to redundancy provided by C&W Sensor Power Relay #2.	a) None	a) None	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
		a) Contact set B fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus Power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
Relay, slow release, C&W Sensor Power Control #2 (K11-6) 52-79715-13 2.3.27 (Controls the switching of C&W Sensor Power Relay #2)	M	a) Coil fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier; and AM Bus Power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal over-stress.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
		a) Contact set A fails open.	a) None, due to redundancy provided by C&W Sensor Power Relay #1.	a) None	a) None	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	a) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, slow release, C&W Sensor Power Control #2 (K11-5) 52-79715-13	M	a) Contact set B fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier; and AM Bus Power from the C&W Sensors.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
Potentiometer, C&W System Tone Vol-Caution 61B769008-13 2.3.28 (Provides control of the volume of the Caution Tone of C&W Subunits 1 & 2).	M	a) Wiper fails to make contact - (Subunit #1 control, pin C)	a) Caution Tone volume from C&W Subunit #1 will decrease.	a) There will be approximately a 5db drop in the Caution Tone.	a) None	a) N/A	- - - - - - - - -
		b) Mechanical shock or Contamination.	b) None, due to redundancy provided by C&W Subunit #2.	b) Increase the volume of the Caution Tone of C&W Subunit #2.	b) None	b) IIIb	
		a) Resistance element opens (Subunit #1 control pins J & K.)	a) Caution Tone volume from C&W Subunit #1 will decrease.	b) There will be approximately a 5db drop in the Caution Tone.	b) None	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #2.	b) Increase the volume of the Caution Tone of C&W Subunit #2.	b) None	b) IIIb	
		a) Wiper fails to make contact - (Subunit #2 control pin E).	a) Caution Tone volume from C&W Subunit #2 will decrease.	a) There will be approximately a 5 db drop in the Caution Tone.	a) None	a) N/A	- - - - - - - - -
		b) Mechanical shock or Contamination.	b) None due to redundancy provided by C&W Subunit #1.	b) Increase the volume of the Caution Tone of C&W Subunit #1.	b) None	b) IIIb	
		a) Resistance element opens (Subunit #2 control-pins D and F.)	a) Caution Tone volume from C&W Subunit #2 will decrease.	a) There will be approximately a 5 db drop in the Caution Tone.	a) None	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechancial or thermal overstress.	b) None due to redundancy provided by C&W Subunit #1.	b) Increase the volume of the Caution Tone of C&W Subunit #1.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Potentiometer C&W System Tone Vol. Warning 61B769008-13 2.3.29 (Provides volume control of the Warning Tone of C&W Subunits 1 and 2)	M	a) Wiper fails to make contact - (subunit #1 contact - pin C)	a) Warning tone volume from C&W Subunit #1 will decrease.	a) There will be approximately a 5 db drop in the Warning Tone.	a) None.	a) N/A	----------
		b) Mechanical shock or contamination.	b) None, due to redundancy provided by C&W Subunit #2.	b) Increase the volume of the Warning Tone of C&W Subunit #2.	b) None.	b) IIIb	
		a) Resistance element opens (Subunit #1 control - pins J and K)	a) Warning tone volume from C&W Subunit #1 will decrease.	a) There will be approximately a 5 db drop in the Warning Tone.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #2.	b) Increase the volume of the Warning Tone of C&W Subunit #2.	b) None.	b) IIIb	
		a) Wiper fails to make contact - (Subunit #2 control - pin K)	a) Warning Tone volume from C&W Subunit #2 will decrease.	a) There will be approximately a 5 db drop in the Warning Tone.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #1.	b) Increase the volume of the Warning Tone of C&W Subunit #1.	b) None.	b) IIIb	
		a) Resistance element opens (Subunit #2 control - pins D and F.)	a) Warning Tone volume from C&W Subunit #2 will decrease.	a) There will be approximately a 5 db drop in the Warning Tone.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #1.	b) Increase the volume of the Warning Tone of C&W Subunit #1.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - C&W Power 1 61C769014-1 2.3.30 (Provides capability to inhibit the C&W Power 1 Caution input)	M	a) Contact set (2,3) or (5,6) fails open.	a) Loss of one-half of the capability to monitor the 28 control voltage and 5V output of C&W DC/DC Converter #1.	a) None	a) T/M data will indicate that the 28 control voltage and logic voltage is low and there is a Caution only on C&W Subunit # 2(1).	a) N/A	----------
		b) Insulating film on contacts due contamination. Contact set (2, 1) and (5,4) as spares.	b) None, due to redundant monitoring circuits for C&W DC/DC Converter #1.	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel C&W Power 2 61C769014-1 2.3.31 (Provides capability to inhibit the C&W Power 2 Caution input).	M	a) Contact set (2, 3) or (5,6) fails open.	a) Loss of one-half of the capability to monitor by 28 control voltage and 5V output of C&W DC/DC Converter #2.	a) None	a) T/M data will indicate that the 28V control voltage and logic voltage is low on C&W Subunit #2 and there is a Caution only on C&W Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact set (2,1) and (5,4) are spares.	b) None, due to redundant monitoring circuits for C&W DC/DC Converter #2.	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - Emerg. Power 1 61C769014-1 2.3.32 (Provides capability to inhibit the Emerg. Power 1 Caution Input).	M	a) Contact set (2,3) (5,6) fails open.	a) Loss of capability of C&W Subunit #1 (2) to monitor Emerg. 1 Power.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2 (1) and not on Subunit #1(2).	a) N/A	
		b) Insulating film on contacts due to contamination. Contact set (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND e) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - Energ. Power 2 61C769014-1 2.3.33 (Provides capability to inhibit the Energ. Power 2 caution input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1 (2) to monitor Energ. 2 Power.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2 (1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - Sieve A Temp. 61C769014-1 2.3.34 (Provides capability to inhibit the Sieve A Temp. caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1 (2) to monitor Molecular Sieve A high temperature.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2 (1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - Sieve A Timer 61C769014-1 2.3.35 (Provides capability to inhibit the Sieve A Timer caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of indication from C&W Subunit #1 (2) when power to Molecular Sieve A cycle timer is interrupted.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2 (1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact set (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel - Sieve B Timer 61C769014-1 2.3.36 (Provides capability to inhibit the Sieve B Timer caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of indication from C&W Subunit #1 (2) when power to Molecular Sieve B cycle timer is interrupted.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - Sieve B Temp. 61C769014-1 2.3.37 (Provides capability to inhibit the Sieve B Temp. caution input.)	M	a) Contact sets (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Molecular Sieve B high temperature.	a) None,	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - Computer X-Over 61C769014-1 2.3.38 (Provides capability to inhibit the Computer X-Over caution input.)	M	a) Contact set (2,3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Computer X-Over.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel - Computer Self Test 610769014-1 2.3.39 (Provides capability to inhibit the Computer Self Test caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Computer Self Test.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - ACS MALF CMD SAT 610769014-1 2.3.40 (Provides capability to inhibit the ACS MALF CMD SAT caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor ACS MALF CMD SAT.	a) None.	a) T/M data will indicate a caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel- ACS MALF TACS CMLY 610769014-1 2.3.41 (Provides capability to inhibit the ACS MALF TACS CMLY caution input).	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor ACS MALF TACS CMLY.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel ACS MALF RATE GYRO 61C769014-1 2.3.42 (Provides capability to inhibit the ACS MALF RATE GYRO caution input.)	M	a) Contact set (2,3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor ACS MALF RATE GYRO.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel ATM CNST Pump ΔP 61C769014-1 2.3.43 (Provides capability to inhibit the ATM CNST Pump ΔP caution input)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor ATM CNST Pump ΔP.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel ATM CNST Heater Temp. 61C769014-1 2.3.44 (Provides capability to inhibit the ATM CNST Heater temp. caution input.)	M	a) Contact set (2, 3) (5, 6) fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor ATM CNST Heater Temp.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel - ATM CNST Coolant Temp. 61C769014-1 2.3.45 (Provides capability to inhibit the ATM CNST Coolant Temp. caution input).	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor ATM CNST Coolant Temp.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - CND SATE Tank ΔP 61C769014-1 2.3.46 (Provides capability to inhibit the CNDSATE Tank ΔP caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor CNDSATE Tank ΔP.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Condensate Tank ΔP Sensor 52-83705-717 2.3.47 (Provides a closure to C&W System when Condensate Tank is full.)	M	a) Loss of output from pin D of connector PTOOCP-10-6S (pin D of connector PTOOCP-8-4P)	a) Loss of capability of C&W Subunit #1(2) to monitor CNDSATE Tank ΔP.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open due to mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Condensate Tank Δ P Sensor 52-88705-717 [illegible], (Continued)	M	a) Loss of output from pin D of connector PTO 6CP-10-65 and pin D of connector PTOOCP-8-4P	a) Loss of capability of C&W to monitor CNDSATE Tank Δ P.	a) None	a) None, unless T/M data indicates Δ P is less than 0.3 PSID, and there is no Caution on the C&W System.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to T/M data.	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Erroneous output from pin D of connector PTO 6CP-10-65 or pin D of connector PTOOCP-8-4P, or from both.	a) False Caution Tone and Cndsate Tank Δ P I.D. light.	a) False Caution Tone on Condensate Tank Δ P I.D. light. Condensate Tank level is okay.	a) None.	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, erroneous output can be inhibited. Crew and ground can increase surveillance of the level in the Condensate Tank.	b) Inhibit erroneous output via Condensate Tank Δ P Inhibit Switch.	b) None.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - OWS Gas Interchg. 61C769014-1 2.3.48 (Provides capability to inhibit the OWS GAS Interchg. caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor OWS Gas Interchg.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel - Sieve A Gas Flow 61C769014-1 2.3.49 (Provides capability to inhibit the Sieve A Gas Flow caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Molecular Sieve A Gas Flow. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None. b) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------
Switch, toggle, C&W System Inhibit Panel - Sieve B Gas Flow 61C769014-1 2.3.50 (Provides capability to inhibit the Sieve B Gas Flow caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Molecular Sieve B Gas Flow. b) None, due to redundancy provided by C&W Subunit #2 (1).	a) None. b) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------
Switch, toggle, C&W System Inhibit Panel - CWS Bus 1 Low 61C769014-1 2.3.51 (Provides capability to inhibit the CWS Bus 1 Low caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contacts (2, 1) and (5, 4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor CWS Bus 1 Low b) None, due to redundancy provided by C&W Subunit #2(1).	a) None. b) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Instrumentation Package 1(2) 61A880000 (1 of 2) (Processes outputs from various C&W sensors and provides individual relay closures to the C&W System for out of tolerance inputs.) 2.3.52A 2.3.52B	M	a) Loss of output from pin C of connector P1. Package #1(2)	a) Loss of capability of C&W Subunit #1(2) to monitor CWS Bus 1 Low	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy	b) IIIb	
		a) Loss of output from pin U of connecter P4.	a) Loss of capability of C&W Subunit #1(2) to monitor CWS Bus 2 Low	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin T of connector P3.	a) Loss of capability of C&W Subunit #1(2) to monitor C&W Signal Conditioning Power to Instrumentation Package #1(2).	a) None.	a) None.	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by Instrumentation Package #2(1).	b) None.	b) None.	b) IIIb	
		a) Loss of output from pin Z of connector P3.	a) Loss of capability of C&W Subunit #1(2) to monitor Sieve A $PPCO_2$.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) but not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin T of connector P6.	a) Loss of capability of C&W Subunit #1(2) to monitor Sieve B $PPCO_2$.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) but not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin PP of connector P2.	a) Loss of capability of C&W Subunit #1(2) to monitor Battery Charge Low 1.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) but not Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Instrumentation Package 1 (2) 61A6S0000 (Continued)	M	a) Loss of output from pin J of connector P2 (pin V, M, of connector P5) (pin L, E, of connector P2) (pin K, P, of connector P5).	a) Loss of capability of C&W Subunit #1(2) to monitor Battery Charge Low 2(3)(4)(5)(6)(7)(8).	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin Z of connector P2.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri. Cool. Temp. High.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin LL of connector P2.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri. Cool. Temp. Low.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin A of connector P5.	a) Loss of capability of C&W Subunit #1(2) to monitor Sec. Cool. Temp. Hi.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin N of connector P5.	a) Loss of capability of C&W Subunit #1(2) to monitor Sec. Cool. Temp. Low.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Instrumentation Package 1(2) 61A880000 (continued)	M	a) Loss of output from pin F of of connector P3.	a) Loss of capability of C&W Subunit #1(2) to monitor Emerg. Sensor 1.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin B of connector P6.	a) Loss of capability of C&W Subunit #1(2) to monitor Emerg. Sensor 2.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin CC of connector P2.	a) None, due to redundancy provided by Instrumentation Package 2(1).	a) None.	a) None.	a) N/A	----------
		b) Open	b) None.	b) None.	b) None.	b) IIIb	
		a) Loss of output from Pin R of connector P1.	a) Loss of capability of C&W Subunit #1(2) to monitor Reg. Bus 1 Low.	a) None.	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin V of connector P1.	a) Loss of capability of C&W Subunit #1(2) to monitor Reg. Bus 1 High.	a) None.	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin DD of connector P1.	a) Loss of capability of C&W Subunit #1(2) to monitor EVA 1 H_2O IN Temp.	a) None.	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Instrumentation Package 1(2) 614S60000 (Continued)	M	a) Loss of output from pin F of connector P4.	a) Loss of capability of C&W Subunit #1(2) to monitor EVA 2 H_2O IN Temp.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin T of connector P4.	a) Loss of capability of C&W Subunit #1(2) to monitor Reg. Bus 2 High.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from Pin Z of connector P4.	a) Loss of capability of C&W Subunit #1(2) to monitor Reg. Bus 2 Low.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Open	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Erroneous output from pin T, Z, C of connector P1, CC, J, Z, LL, PP of connector P2, F of connector P4, A, N of connector P5, B, or T of connector P6.	a) False Caution Tone and I.D. light for the associated channel.	a) False Caution Tone and I.D. light. Monitored system checks OK.	a) T/M data will indicate a Caution on one C&W Subunit and not on the other.	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, erroneous output can be inhibited by the associated inhibit switch. Crew and ground can increase surveillance of the associated system.	b) Inhibit erroneous output via the associated inhibit switch.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Instrumentation Package 1(2) 61A380000 (Continued)	M	a) Erroneous output from pin DD, R V of connector P1, or F, T, Z of connector P4.	a) False Warning Tone and I.D. light for the associated channel.	a) False Warning Tone and I.D. light. Monitored system checks okay.	a) T/M data will indicate a Warning on one C&W Subunit and not on the other.	a) N/A	----------
		b) Mechanical or thermal over-stress.	b) None, erroneous output can be inhibited by the associated inhibit switch. Crew and Ground can increase surveillance of the associated system.	b) Inhibit erroneous output via the associated inhibit switch	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - CWS Bus 2 Low 61C769014-1 2.3.53 (Provides capability to inhibit the CWS Bus 2 Low caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor CWS Bus 2 Low.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel - C&W Sig. Cond. 61C769014-1 2.3.54 (Provides capability to inhibit the C&W Sig. Cond. caution input.)	M	a) Contact set (2, 3)[(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor C&W Sig. Cond.	a) None.	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5, 4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel Sieve A $PPCO_2$ 61C769014-1 2.3.55 (Provides capability to inhibit the Sieve A $PPCO_2$ caution input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Sieve A $PPCO_2$.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel Sieve B PCO_2 61C769014-1 2.3.56 (Provides capability to inhibit the Sieve B PCO_2 caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Sieve B $PPCO_2$.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel Battery Charge Low 1 (2) (3)(4)(5)(6)(7) (8) 61C769014-1 (1 of 8) (Provides capability to inhibit the Battery Charge Low caution input 2.3.57-.64	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Battery Charge Low 1 (2)(3) (4)(5)(6)(7)(8).	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel Pri. Cool. Temp. High 61C769014-1 2.3.65 (Provides capability to inhibit the Pri. Cool. Temp. caution input.)	M	a) Contact set (2,3) [(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri. Cool. Temp. High. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------
Switch, toggle, C&W System Inhibit Panel Pri. Cool. Temp. Low 61C769014-1 2.3.66 (Provides capability to inhibit the Pri. Cool. Temp. Low caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri. Cool. Temp. Low. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------
Switch, toggle, C&W System Inhibit Panel Sec. Cool. Temp. High 61C769014-1 2.3.67 (Provides capability to inhibit the Sec. Cool. Temp. Low caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Sec. Cool. Temp. High. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W System Inhibit Panel Sec. Cool. Temp. Low 61C769014-1 2.3.68 (Provides capability to inhibit the Sec. Cool. Temp. Low caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Sec. Cool. Temp. Low.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel Emerg. Sensor 1 61C769014-1 2.3.69 (Provides capability to inhibit the Emerg. Sensor 1 caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Sec. Cool. Temp. Low.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W System Inhibit Panel Emerg. Sensor 2 61C769014-1 2.3.70 (Provides capability to inhibit the Emerg. Sensor 2 caution input.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Emerg. Sensor 2 Power.	a) None	a) T/M data will indicate a Caution on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND e) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Resistor, RBR52510001FM (1 of 16) 2.3.71-.86 (Provides isolation for the signal conditioning electronics of Battery Charge Low Caution input.)	M	a) Open	a) False Caution Tone and associated Battery Charge Low I.D. Light.	a) False Caution Tone and Associated Battery Charge Low I.D. Light.	a) None	a) N/A	----------
		b) Defective termination	b) None, false input to C&W System can be inhibited. Crew and Ground can increase surveillance of system.	b) Inhibit erroneous input via associated inhibit switch.	b) None	b) IIIb	
Pri. (Sec.) Coolant Loop Sensor #1(2) 52-88721-255 (1 of 4) 2.3.87 2.3.88 2.3.89 2.3.90 (Monitors temp. of Primary Coolant Loop)	M	a) Loss of output from the Blue or Red output.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri. (Sec.) Cool. Temp. High.	a) None	a) T/M data will indicate a Caution on one C&W Subunit, but not on the other.	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Erroneous output from the Blue or Red output.	a) False Caution Tone and Pri. (Sec.) Cool. Temp. High I.D. Light.	a) False Caution Tone and Pri. (Sec.) Cool. Temp. High I.D. Light.	a) None	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, faulty sensor can be inhibited. Crew and Ground can increase surveillance of coolant temperature.	b) Inhibit erroneous output via associated inhibit switch.	b) None	b) IIIb	
Pri. (Sec.) Coolant Loop 40° Control Valve Outlet Temp. Sensor #1(2) (1 of 4) 2.3.91, 2.3.92, 2.3.93, 2.3.94 (Monitors coolant temperature at the outlet of the 40° Control Valve)	M	a) Loss of output from the Blue or Red output.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri. (Sec.) Cool. Temp. Low.	a) None	a) T/M data will indicate a Caution on one C&W Subunit but not on the other.	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Erroneous output from the Blue or Red output.	a) False Caution Tone and Pri. (Sec.) Cool. Temp. Low I.D. Light.	a) False Caution Tone and Pri. (Sec.) Cool. Temp. Low I.D. Light.	a) None	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, faulty sensor can be inhibited. Crew and Ground can increase surveillance of coolant temperature.	b) Inhibit erroneous output via associated inhibit switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Resistor, RER52510C001FM (1 of 4) 2.3.95 2.3.96 2.3.97 2.3.98 (Provides isolation for Emergency Power monitoring signal conditioning electronics.)	M	a) Open	a) False Caution Tone and Energ. Sensor #1 (2) I.D. Light.	a) False Caution Tone and Energ. Sensor #1(2) I.D. Light.	a) None	a) N/A	----------
		b) Defective termination	b) None, false input to C&W System can be inhibited. Crew and Ground can insure surveillance of system.	b) Inhibit erroneous input via associated inhibit switch.	b) None	b) IIIb	
Switch, toggle, C&W Inhibit Panel - Cluster Press 61C769014-1 2.3.99 (Provides capability to inhibit the Cluster Pressure Low Warning input.)	M	a) Contact set (2,3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Cluster Pressure Low.	a) None.	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets(2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None.	b) Inform crew of discrepancy.	b) IIIb	
Cluster Low Pressure Sensor 1(2) 52-85705-715 (1 of 2) 2.3.100 2.3.101 (Provides a closure to the C&W System when cluster pressure decreases to 4.5 PSIA.)	M	a) Loss of output from pins E and D.	a) Loss of capability of C&W Subunit #1(2) to monitor Cluster Pressure Low.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Erroneous output from pins E and D.	a) False Warning Tone and Cluster Press. I.D. Light.	a) False Warning Tone and Cluster Press. I.D. Light.	a) None	a) N/A	----------
		b) Mechanical or thermal overstress.	b) None, faulty sensor can be inhibited. Crew and Ground can increase surveillance of cluster pressure.	b) Inhibit erroneous input via associated inhibit switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - Clstr Att. Thruster Stuck 61C769018-1 2.3.102 (Provides capability to inhibit the Clstr Att. Thruster Stuck Warning input.)	M	a) Contact set (2,3)[(5,6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Clstr Att. Thruster Stuck. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	
Switch, toggle, C&W Inhibit Panel - Clstr Att. High Rate 61C769014-1 2.3.103 (Provides capability to inhibit the Clstr Att-Hi Rate Warning input.)	M	a) Contact set (2,3)[(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Clstr Att. High Rate. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	
Switch, toggle, C&W Inhibit Panel - ATM Bus 2 Low 61C769014-1 2.3.104 (Provides capability to inhibit the ATM Bus 2 Low Warning input.)	M	a) Contact set (2,3)[(5, 6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor ATM Bus 2 Low. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	
Switch, toggle, C&W Inhibit Panel - ATM Bus 1 Low 61C769014-1 2.3.105 (Provides capability to inhibit the ATM Bus 1 Low Warning input.)	M	a) Contact set (2, 3) [(5,6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor ATM Bus 1 Low. b) None, due to redundancy provided by C&W Subunit #2(1)	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - CSM 1 61C769014-1 2.3.106 (Provides capability to inhibit the CSM 1 Warning input.)	M	a) Contact set (2,3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor CSM 1.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - CSM 2 61C769014-1 2.3.107 (Provides capability to inhibit the CSM 2 Warning input.)	M	a) Contact set(2,3) [(5, 6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor CSM 2.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Relay, Latching, EVA Sensor Pwr. #1(2) 52-79703-61 (K11-17) (K11-15) (1 of 2) 2.3.108 2.3.109 (Provides capability to apply C&W 28 Volts to EVA Leg. 1(2) Pump Δ P Switch when Suit Umb. Sys. pumps are powered.)	M	a) Latch coil fails open, Pole B fails open in the reset position, or Pole C fails open in the latch position.	a) Loss of capability of C&W to monitor EVA 1(2) Pump ΔP due to loss of power to EVA LCG 1(2) Pump Δ P Switch.	a) Crew fails to obtain a momentary C&W Warning Tone and EVA 1(2) Pump Δ P when Lock Compartment Suit Umb.sys.1(2) Pump Switch is placed in the Pri. or Sec. position.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress. Insulating film on contacts due to contamination	b) None, a redundant system is available. System performance can be monitored via other parameters.	b) Activate the redundant system, or request Ground to monitor system performance.	b) Coordinate system performance with crew if requested.	b) IIIb	
		a) Reset coil fails open or Pole B fails open in the latch position.	a) False Warning Tone and EVA 1(2) - Pump Δ P I.D. Light.	a) False Warning Tone and EVA -1(2) Pump Δ P I.D. Light.	a) None	a) N/A	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, EVA Sensor Pwr. #1(2) 52-79703-61 (Continued)	M	b) Defective terminal or wire subjected to mechanical or thermal overstress. Insulating film on contacts due to contamination.	b) None, erroneous output can be inhibited. Crew and Ground can increase surveillance when pumps are activated.	b) Inhibit erroneous input via associated inhibit switch.	b) None	b) IIIb	
		a) Pole D fails open in the latch position.	a) Loss of power to EVA 1(2) Suit Inlet Temp. Sensor #2.	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by EVA 1(2) Suit Inlet Temp. Sensor #1.	b) None	b) None	b) IIIb	
		a) Pole E fails open in the latch position.	a) Loss of power to EVA 1(2) Suit Inlet Temp. Sensor #1.	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by EVA 1(2) Suit Inlet Temp. Sensor #2.	b) None	b) None	b) IIIb	
		Pole F is a spare.					
Relay, momentary, EVA Sensor Power Control H1(2) 52-79715-13 (K11-16) (K11-18) 2.3.110 2.3.111 (Controls the switching function of EVA Sensor Pwr Relay #1(2))	M	a) Pole B fails open.	a) False Warning Tone and EVA 1(2) - Pump Δ P I.D. Light.	a) False Warning Tone and EVA - 1(2) Pump Δ P I.D. light.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, erroneous output can be inhibited. Crew and Ground can increase surveillance when pumps are activated.	b) Inhibit erroneous input via associated inhibit switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, EVA Sensor Pwr Cntrl #1(2) 52-79715-13 (Continued)	M	a) Pole A fails open or coil fails open.	a) Loss of capability of C&W to monitor EVA 1(2) Pump ΔP due to loss of power to EVA LCG 1(2) Pump ΔP Switch.	a) Crew fails to obtain a momentary Warning Tone and EVA 1 (2) Pump ΔP when the Lock Compartment Suit Umb. Sys. 1(2) Pump Switch is placed in the "Pri" or "Sec." position.	a) None	a) N/A	----------
		b) Insulating film on contacts. Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, a redundant system is available. System performance can be monitored via other parameters.	b) Activate the redundant system or request Ground to monitor system performance.	b) Coordinate system performance with the Crew, if requested.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - EVA 1 - Pump ΔP 61C769014-1 2.3.112 (Provides capability to inhibit the EVA 1 Pump ΔP Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor EVA 1 Pump ΔP.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - EVA 2 - Pump ΔP 61C769014-1 2.3.113 (Provides capability to inhibit the EVA 2 - Pump ΔP Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor EVA 2 - Pump ΔP.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - Pri(Sec) Cool. Pump A 61C769014-1 2.3.114 (Provides capability to inhibit the Pri (Sec) Cool. Pump A Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri (Sec) Coolant Pump A. b) None, due to redundancy provided by C&W Subunit #2(1)	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------
Switch, toggle, C&W Inhibit Panel - Pri(Sec) Cool. Pump B 61C769014-1 2.3.115 (Provides capability to inhibit the Pri (Sec.) Cool. Pump B Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open. b) Insulating film on contacts due to contamination.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri (Sec) Coolant Pump B. b) None, due to redundancy provided by C&W Subunit #2(1)	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------
Switch, toggle, C&W Inhibit Panel - Pri (Sec) Cool. Pump C 61C769014-1 (1 of 2) 2.3.116, 2.3.117 (Provides capability to inhibit the Pri (Sec) Cool. Pump C Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open. b) Insulating film on contects due to contamination. Contact sets (2,1) and(5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Pri(Sec) Coolant Pump C. b) None, due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - Crew Alert 1(2) 6107699014-1 (1 of 2) 2.3.118, 2.3.119 (Provides capability to inhibit the Crew Alert 1 Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Crew Alert 1(2).	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) None	b) Inform crew of discrepancy.	b) IIIb	
Relay, latching, Crew Alert No. 1 (2) (K11-1) (K11-2) 52-79703-45 (1 of 2) 2.3.120 2.3.121 (Provides capability of Ground to initiate the Crew Alert Warning parameter.)	M	a) Latch coil fails open.	a) Loss of Ground capability to alert crew via CRDU Channel S176 (S240)	a) None	a) Crew does not respond to crew alert. T/M data will indicate no "Warning" on the C&W System.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by alternate Crew Alert Relay and CRDU Channel.	b) None	b) Alert crew via Crew Alert Relay #2(1) and CRDU Channel S240 (S176).	b) IIIb	
	M	a) Reset coil fails open.	a) Loss of capability to remove Crew Alert 1 (2) Warning input.	a) Crew Alert 1(2) input cannot be removed from the C&W System by resetting the C&W System via Master Alarm Telelight Switch.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to capability to remove Crew Alert 1(2) Warning input via the associated inhibit switch.	b) Inhibit the Crew Alert via the associated inhibit switch.	b) Attempt to reset the Crew Alert Relay #2(1) via CRDU Command S177 (S241).	b) IIIb	
		a) Pole B fails open in the latch position.	a) Loss of Ground capability to alert crew via CRDU Channel S176 (S240).	a) None	a) Crew does not respond to crew alert via CRDU Channel S176 (S240). T/M data will indicate no "Warning" on the C&W System.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by an alternate Crew Alert Relay CRDU Channel S240 (S176).	b) None.	b) Alert crew via Crew Alert Relay #2(1) and CRDU Channel S240(S176).	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Crew Alert No. 1(2) (2) Continued	M	a) Pole C(D) fails open in the latch position.	a) None, due to redundancy provided by Pole D(C) and CSM-AM Call Relay No. 2(1)	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact set A is used for GSE only.	b) None	b) None	b) None	b) IIIb	
Relay, Momentary Crew Alert Reset #1(2) (K11-11) (K11-12) 52-79703-43 1 of 2 2.3.122 2.3.123 (Provides capability for the crew to reset the Crew Alert Relay via C&W unit.)	M	a) Coil fails open.	a) Loss of Crew capability to reset the Crew Alert Relay #1(2).	a) When the Master Alarm Telelight Switch is depressed, the Crew Alert Warning parameter is not cleared.	a) None	a) N/A	----------
		b) Defective terminal subjected to mechanical or thermal overstress.	b) None, due to Ground's capability to reset the Crew Alert Relay #1(2) via CRDU.	b) Request Ground to reset Crew Alert Relay #1(2) or inhibit the Crew Alert Warning input via the associated inhibit switch.	b) Reset Crew Alert Relay #1(2) via CRDU if requested by Crew.	b) IIIb	
		a) Contact set A fails open.	a) Loss of Crew capability to reset the Crew Alert Relay #1(2) since the release time of the Crew Alert Reset Relay is less than the time required to reset the crew alert Relay.	a) When the Master Alarm Telelight Switch is depressed, the Crew Alert Warning parameter is not cleared.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to Ground capability to reset the Crew Alert Relay #1(2) via CRDU.	b) Request Ground to reset Crew Alert Relay #1(2) or inhibit the Crew Alert Warning input via the associated inhibit switch.	b) Reset Crew Alert Relay #1(2) via CRDU if requested by Crew.	b) IIIb	
		a) Contact set B fails open.	a) Loss of Crew capability to reset the Crew Alert Relay #1(2).	a) When the Master Alarm Telelight Switch is depressed, the Crew Alert Warning parameter is not cleared.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to Ground capability to reset the Crew Alert Relay #1(2) via CRDU.	b) Request Ground to reset crew Alert Relay #1(2) or inhibit the Crew Alert Warning input via the associated inhibit switch.	b) Reset Crew Alert Relay #1(2) via CRDU if requested by Crew.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Fuse, Reg. Bus 1(2) C&W Monitor Low 1(2) 52-79720-322 (11-9) (11-19) (11-18) (11-20) (1 of 4) 2.3.124 2.3.125 2.3.126 2.3.127 (Provides capability to monitor for Reg. Bus Low voltage.)	M	a) Fails open. b) Opens before break current is exceeded.	a) False Warning Tone and False Reg. Bus 1(2) Low I.D. light. b) None. Reg. Bus Low 1(2) Warning input can be inhibited via the associated inhibit switch.	a) False Warning Tone and False Reg. Bus 1(2) Low I.D. light. b) Verify proper Reg. Bus Voltage and inhibit erroneous input via the Reg. Bus Low 1(2) Inhibit Switch.	a) None b) None	a) N/A b) IIIb	----------
Fuse, Reg. Bus 1(2) C&W Monitor High 1(2) 52-79720-322 (11.9) (11.15) (11.10) (11.16) (1 of 4) 2.3.128 2.3.129 2.3.130 2.3.131 (Provides capability to monitor for Reg. Bus high voltage.)	M	a) Fails open. b) Opens before break current is exceeded.	a) None, due to redundancy provided by Reg. Bus 1(2) C&W Monitor High 2(1) Fuse, and associated circuitry. b) None	a) None b) None	a) None b) None	a) N/A b) IIIb	----------
Switch, toggle, C&W Inhibit Panel - Reg. Bus 1 (2) Low 61C769014-1 (1 of 2) 2.3.132 2.3.133 (Provides capability to inhibit the Reg. Bus 1(2) Low Warning input.)	M	a) Contact set (2,3) or [(5,6)] fails open. b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	a) Loss of capability of C&W Subunit #1(2) to monitor Reg. Bus 1 Low. b) None due to redundancy provided by C&W Subunit #2(1).	a) None b) None	a) T/M data will indicate a warning on C&W Subunit #2(1) and not on Subunit #1(2). b) Inform crew of discrepancy.	a) N/A b) IIIb	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - Reg. Bus 1(2) High 61C769014-1 1 of 2 2.3.134 2.3.135 (Provides capability to inhibit the Reg. Bus 1(2) High Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor Reg. Bus 1(2) High.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - EVA 1 H_2O IN TEMP 61C769014-1 2.3.136 (Provides capability to inhibit the EVA 1 H_2O IN TEMP Warning input).	M	a) Contact set (2,3) (5,6) fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor EVA 1 H_2O In Temp.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
EVA 1 (2) Suit Inlet Sensor #1(2) 52-88721-205 (1 of 4) 2.3.137 2.3.138 2.3.139 2.3.140 (Monitors for a temp. of EVA Suit Inlet H_2O less than 33.5 ± 1.21°F)	M	a) Loss of output from Red or Blue pins.	a) Loss of output to Instrumentation Package No. 1(2).	a) None	a) None	a) N/A	----------
		b) Open	b) None, due to redundancy provided by EVA 1(2) Suit Inlet Sensor #2(1).	b) None	b) None	b) IIIb	
		a) Erroneous output from Red or Blue pin.	a) False Warning Tone and EVA 1(2) H_2O In Temp. I.D. light.	a) False Warning Tone and EVA 1(2) H_2O In Temp. I.D. light.	a) None	a) N/A	----------
		b) Internal component subjected to mechanical or thermal overstress.	b) None, erroneous output can be inhibited via the associated inhibit switch.	b) Verify proper system operation and inhibit the faulty sensor via the associated inhibit switch. Increase system surveillance.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - EVA 2 H_2O In Temp. 61C769014-1 2.3.141 (Provides capability to inhibit the EVA 2 H_2O In Temp. Warning input.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of C&W Subunit #1(2) to monitor EVA 2 H_2O In Temp.	a) None	a) T/M data will indicate a Warning on C&W Subunit #2(1) and not on Subunit #1(2).	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
Relay, momentary Sensor 1 of Fire Sensor Control Panel 52-79703-1 (1 of 11) 2.3.142-2.3.152 (Provides capability for the associated fire sensor #1 to trigger Emergency Subunit #1 & 2).	M	a) Coil fails open.	a) Loss of capability of fire sensor 1 to trigger Emergency Subunits 1 and 2 until control panel is replaced.	a) During in-flight testing, sensor 1 will not trigger the C&W System.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to partial overlap of sensor coverage and the crew's capability to detect a fire. In-flight testing will detect the failure and the control panel is in-flight replaceable.	b) Isolate failure to control panel and replace the control panel.	b) None	b) IIIb	
		a) Pole A fails open.	a) Loss of capability of fire sensor 1 to trigger Emergency Subunit #1 until control panel is replaced.	a) None	a) T/M data will indicate a fire closure from Emergency Subunit #2 and not from Emergency Subunit #1.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Emergency Subunit #2.	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability of fire sensor 1 to trigger Emergency subunit #2 until control panel is replaced.	a) None	a) T/M data will indicate a fire closure from Emergency subunit #1 and not from Emergency subunit # 2.	a) N/A	----------
		b) Insulating film on contacts due to contamination	b) None due to redundancy provided by Emergency subunit #1.	b) None	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, Sensor 2 of Fire Sensor Control Panel 52-79703-1 (1 of 10) 2.3.153-2.3.162 (Provides capability for the associated sensor #2 to trigger Emergency Subunit 1 & 2.)	M	a) Coil fails open.	a) Loss of capability of fire sensor #2 to trigger Emergency Subunit 1 and 2 until control panel is replaced.	a) During in-flight testing, sensor 2 will not trigger the C&W System.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to partial overlap of sensor coverage and the crew's capability to detect a fire. In-flight testing will detect the failure and the control panel is in-flight replaceable.	b) Isolate failure to control panel and replace the control panel.	b) None	b) IIIb	
		a) Pole A fails open.	a) Loss of capability of fire sensor 2 to trigger Emergency Subunit #2 until control panel is replaced.	a) None	a) T/M data will indicate a fire closure from Emergency Subunit #1 and not from Emergency Subunit #2.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Emergency Subunit #1.	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability of fire sensor 2 to trigger Emergency Subunit #1 until the control panel is replaced.	a) None	a) T/M data will indicate a fire closure from Emergency Subunit #2 and not from Emergency Subunit #1.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Emergency Subunit #2.	b) None	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, Sensor 1 of Fire Sensor Control Panel 52-79705-13 (1 of 11) 2.3.163-2.3.173 (Provides capability to power sensor 1 from either EPS Control Bus, 1 or 2.)	M	a) Contact set (2,1) or (5,4) fails open in the "Bus 2" position.	a) Loss of EPS Control Bus 2 power to sensor 1 until control panel is replaced.	a) During in-flight testing sensor 1 will not trigger the C&W System when Sensor 1 Switch is in the "Bus 2" position. Sensor 1 light will not be on.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, sensor 1 can be powered from EPS Control Bus 1. In-flight testing will detect the failure.	b) Isolate failure to control panel and replace the control panel.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, Sensor 1 of Fire Control Panel 52-79705-13 (Continued)	M	a) Contact set (2,3) or (5,6) fails open in "Bus 1" position.	a) Loss of EPS Control Bus 1 power to sensor 1 until control panel is replaced.	a) During in-flight testing sensor 1 will not trigger the C&W System when Sensor 1 Switch is in the "Bus 1" position. Sensor 1 light will not be on.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, sensor 1 can be powered from EPS Control Bus 2. In-flight testing will detect the failure.	b) Isolate failure to control panel and replace the control panel.	b) None	b) IIIb	
Switch, toggle, Sensor 2 of Fire Sensor Control Panel 52-79705-13 (1 of 10) 2.3.174-2.3.183 (Provides capability to power sensor 2 from either EPS Control Bus, 1 or 2.)	M	a) Contact set (2, 1) or (5,4) fails open in the "Bus 2" position.	a) Loss of EPS Control Bus 2 power to sensor 2 until control panel is replaced.	a) During in-flight testing sensor 2 will not trigger the C&W System when Sensor 2 Switch is in the "Bus 2" position. Sensor 2 light will not be on.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, sensor 2 can be powered from EPS Control Bus 1. In-flight testing will detect the failure.	b) Isolate failure to control panel and replace the control panel.	b) None	b) IIIb	
		a) Contact set (2, 3) or (5,6) fails open in the "Bus 1" position.	a) Loss of EPS Control Bus 1 power to sensor 2 until control panel is replaced.	a) During in-flight testing sensor 2 will not trigger the C&W System when Sensor 2 Switch is in the "Bus 1" position. Sensor 2 light will not be on.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, sensor 2 can be powered from EPS Control Bus 2. In-flight testing will detect the failure.	b) Isolate failure to control panel and replace the control panel.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) NDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, momentary, Test/Reset of Fire Sensor Control Panel 52-79705-111 (1 of 11) 2.3.184-2.3.194 (Provides capability to test fire sensor 1 and 2 and associated circuitry.)	M	a) Contact set (2,1) [(8,7)] fails open in the "Test" position.	a) Loss of crew capability to test fire sensor 1(2) and associated circuitry until fire sensor control panel is replaced.	a) When the Test/Reset Switch is placed in the "Test" position, sensor 1(2) does not actuate. Emergency Subunit 1 and 2.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to crew's capability to replace the fire sensor control panel.	b) Isolate failure to fire sensor control panel and replace panel.	b) None	b) IIIb	
		a) Contact set (5,6) [(11,12)] fails open in the "Master Alarm Reset" position.	a) Loss of crew capability to reset Emergency Subunit #1(2) via Test/Reset Switch.	a) When the Test/Reset Switch is placed in the "Master Alarm Reset" position, Emergency Subunit #1(2) is not reset.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (11,10), (8,9), (2,3) and (5,4) are spares.	b) None, due to crew's capability to reset the Emergency System via Master Alarm Reset switches and Test/Reset Switch on the other fire control panels.	b) Reset the Emergency System via Master Alarm Reset Switches or Test/Reset Switches on other fire control panels.	a) None	b) IIIb	
Fuse, Sensor 1 Power, of Fire Sensor Control Panel 52-79720-322 (1 of 11) 2.3.195-2.3.205 (Provides protection for the electronic circuitry of Fire Sensor 1)	M	a) Opens before nominal rated current is exceeded.	a) Loss of power to fire sensor 1 until fire sensor control panel is replaced.	a) During in-flight testing sensor 1 will not trigger the C&W System and Sensor 1 light will not light.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, in-flight testing will detect the failure. Fire sensor control panel is in flight replaceable.	b) Isolate failure to fire sensor control panel and replace panel.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Fuse, Sensor 2 Power, of Fire Sensor Control Panel 52-79720-322 (1 of 10) 2.3.206-2.3.215 (Provides protection for the electronic circuitry of Fire Sensor 2.)	M	a) Opens before nominal rated current is exceeded.	a) Loss of power to fire sensor 2 until fire sensor control panel is replaced.	a) During in-flight testing sensor 2 will not trigger the C&W System and Sensor 2 light will not light.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, in-flight testing will detect the failure. Fire sensor control panel is in flight replaceable.	b) Isolate failure to fire sensor control panel and replace panel.	b) None	b) IIIb	
Light, Sensor 1 52-79718-71 (1 of 11) 2.3.216-2.3.226 (Provides visual indication to the crew when Sensor #1 is powered.)	M	a) Filament fails open.	a) Loss of visual indication that Fire Sensor #1 is powered.	a) When Sensor 1 Switch is in either "Bus 1" or "Bus 2" position, Sensor 1 light is not lit. Test of Sensor 1 will indicate power is applied.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, test Sensor #1 to verify that it is powered.	b) None	b) None	b) IIIb	
Light, Sensor #2 52-79718-71 (1 of 10) 2.3.227-2.3.236 (Provides visual indication to the crew when Sensor #2 is powered.)	M	a) Filament fails open.	a) Loss of visual indication that Fire Sensor #2 is powered.	a) When Sensor 2 Switch is in either "Bus 1" or "Bus 2" position, Sensor 2 light is not lit. Test of Sensor #2 indicates that it is powered.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, test Sensor #2 to verify that it is powered.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Fire Sensor 61B880060 (1 of 22) 2.3.237-2.3.258 (Provides a closure to the associated Fire Sensor Control Panel when the ultraviolet radiation between 2000A and 2800A exceeds the background radiation.)	M	a) Loss of output from Pin K and L.	a) Loss of capability of the Fire Sensor to trigger Emergency Subunits 1 and 2.	a) During in-flight testing, the Fire Sensor will not trigger Emergency Subunits 1 and 2.	a) None	a) N/A	----------
		b) Open, due to mechanical or thermal stress.	b) None, due to partial overlap of sensor coverage and the crew's capability to detect a fire. In-flight testing will detect the Fire Sensor failure. Fire Sensor is in-flight replaceable.	b) Isolate failure to Fire Sensor and replace the Fire Sensor.	b) None	b) IIIb	
		a) Loss of output from pin K or L.	a) None, due to redundancy provided by pin L or K.	a) None	a) None	a) N/A	----------
		b) Open due to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	
		a) Erroneous output from pin K or L.	a) False Emergency Fire Tone and associated Fire I.D. light.	a) False Emergency Fire Tone and associated Fire I.D. light.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, erroneous output can be inhibited. Faulty Fire Sensor is in-flight replaceable.	b) Verify false alarm. Replace faulty Fire Sensor.	b) None	b) IIIb	
Rapid ΔP Sensor #1(2) 61B880059 (1 of 2) 2.3.259 2.3.260 (Provides a closure to the Emergency Subunit if Cabin ΔP exceeds .1 PSI/MIN.)	M	a) Loss of output from pin Naand R.	a) Loss of capability of Rapid ΔP Sensor #1(2) to trigger Emergency Subunit #1(2) when cabin pressure Δ P exceeds .1 PSIA/MIN.	a) During in-flight testing Rapid ΔP Sensor #1(2) will not trigger Emergency Subunit #1(2).	a) T/M data will indicate a rapid ΔP/ΔT Emergency on Emergency Subunit #2(1) and not on Emergency Subunit #1 (2).	a) N/A	----------
		b) Open due to mechanical or thermal stress.	b) None, due to redundancy provided by Rapid Δ P Sensor #2(1) and Emergency Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin N or R.	a) None, due to redundancy provided by pin R or N.	a) None	a) None	a) N/A	----------
		b) Open due to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Rapid ΔP Sensor #1(2) 61B880059 (Continued)	M	a) Erroneous output from pin N and/or R.	a) False Emergency Rapid ΔP /ΔT Tone and associated Rapid ΔP/ ΔT I.D. light.	a) False Emergency Rapid ΔP/ ΔT Tone and associated Rapid ΔP/ ΔT I.D. light.	a) T/M data will indicate a rapid ΔP/ ΔT Emergency on Emergency Subunit #1(2) and not on Emergency Subunit #2(1).	a) N/A	----------
		b) Open due to mechanical or thermal stress.	b) None, erroneous output can be inhibited via the associated inhibit switch.	b) Isolate failure to Rapid ΔP Sensor and inhibit its input to the C&W Unit via the associated inhibit switch.	b) Inform crew of discrepancy.	b) IIIb	
Switch, toggle, C&W Inhibit Panel - MDA/STS Fire 1(2) 61C769014-1 (1 of 2) 2.3.261, 2.3.262 (Provides capability to inhibit the MDA/STS Fire 1 input to C&W Unit.)	M	a) Contact set (2,3) [(5, 6)] fails open.	a) None, due to redundancy provided by contact set (5,6) [(2,3)] .	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact set (2.1) and (5,4) are spares.	b) None	b) None	b) None	b) IIIb	
Switch, toggle, C&W Inhibit Panel - AM AFT Fire 1(2) 61C769014-1 (1 of 2) 2.3.263 2.3.264 (Provides capability to inhibit the AM AFT Fire input to the C&W Unit.)	M	a) Contact set (2, 3) [(5, 6)] fails open.	a) None, due to redundancy provided by contact set (5,6) [(2,3)] .	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact set (2,1) and (5,4) are spares.	b) None	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, C&W Inhibit Panel - CWS FWD Fire 1(2) 61C769014-1 (1 of 2) 2.3.265 2.3.266 (Provide capability to inhibit the CWS FWD Fire input to the C&W unit.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) None, due to redundancy provided by contact set (5, 6) [(2,3)].	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None	b) None	b) None	b) IIIb	
Switch, toggle, C&W Inhibit Panel - CWS EXP Fire 1(2) 61C769014-1 (1 of 2) 2.3.267 2.3.268 (Provides capability to inhibit the CWS EXP Fire input to the C&W Unit.)	M	a) Contact set (2, 3) [(5,6)] fails open.	a) None, due to redundancy provided by contact set (5,6) [(2,3)].	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact set (2,1) and (5,4) are spares.	b) None	b) None	b) None	b) IIIb	
Switch, toggle, C&W Inhibit Panel - Rapid Δ P - 1(2) 61C769014-1 (1 of 2) 2.3.271 2.3.272 (Provides capability to inhibit the Rapid Δ P input to the C&W Unit.)	M	a) Contact set (2,3) [(5,6)] fails open.	a) Loss of capability of Rapid ΔP/ΔT Sensor 1(2) to trigger Emergency Subunit #1(2).	a) During in-flight testing, Rapid ΔP/ ΔT Sensor #1(2) does not trigger Emergency Subunit #1(2).	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2,1) and (5,4) are spares.	b) None, due to redundancy provided by Rapid ΔP/Δ T Sensor #2(1) and Emergency Subunits #1 & 2.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Indicator light, Emergency-Fire 61C769007-5 (1 of 10) 2.3.273-2.3.282 (Provides the crew, via a visual indicator, the general area of the fire.)	M	a) Filament fails open.	a) None, due to redundancy provided by alternate indicator light powered by the alternate Emergency Subunit.	a) During in-flight testing, one Emergency Subunit will not light the indicator light of one channel.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None	b) None.	b) None	b) IIIb	
Indicator light Emergency - Rapid Δ P 61C769007-5 (1 of 2) 2.3.283 2.3.284 (Provides visual indication of an Emergency Rapid Δ P on the C&W System.)	M	a) Filament fails open.	a) None, due to redundancy provided by alternate indicator light powered by the Alternate Emergency Subunit.	a) During in-flight testing, one Emergency Subunit will not light the indicator light of one channel.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None	b) None.	b) None.	b) IIIb	
Relay, momentary master alarm status lts. #1 (2) 52-79703-43 (K11-9) (K11-10) (1 of 2) 2.3.285 2.3.286 (Provides power to Master Alarm Status Lights of the Speaker Intercom.)	M	a) Coil fails open or contact set B or C fails open.	a) Loss of crew's capability to reset Crew Alert Relay #1(2), resulting in the voice communication system remaining in the "Call" mode until reset by ground.	a) Voice communication system remains in the "Call" mode when the Crew Alert Warning parameter is reset. One of the two Master Alarm Status Lights on the Speaker Intercom fails to light when the C&W System is triggered coil is open.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress or Insulating film on contacts due to contamination.	b) None, Ground can reset Crew Alert Relay #1(2) via CRDU command S177(S241).	b) Request Ground to reset Crew Alert Relay #1(2) via CRDU command S177(S241).	b) Reset Crew Alert Relay #1(2) via CRDU command S177(S241) upon Crew request.	b) IIIb	
		a) Pole A fails open.	a) Loss of one of the two Master Alarm Status Lights on the Speaker Intercoms.	a) One of the two Master Alarm Status Lights fails to light when the C&W System is triggered.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by alternate Master Alarm Status Light and Master Alarm Status Lights Relay.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, magnetic, Master Alarm Status Lights 1(2) 52-79721-322 (11-11) (11-12) (1 of 2) 2.3.287 2.3.288 (Provides power to the Master Alarm Status Lights on the Speaker Intercom.)	M	a) Opens before break current is exceeded.	a) Loss of one of the two Master Alarm Status Lights on the Speaker Intercom.	a) One of the two Master Alarm Status Lights fails to light when the C&W System is triggered.	a) None.	a) N/A	----------
		b) Internal defect, will short to ground.	b) None, due to redundancy provided by alternate Master Alarm Status Light and Master Alarm Status Lights Relay.	b) None	b) None	b) IIIb	
Caution & Warning High Level Audio Amplifier 61B850012 2.3.289 (Provides a redundant path for Caution and Warning audio tones by amplifying the tones so that the Speaker Intercom electronics can be by-passed.	M	a) Loss of output from F or G of connector P1.	a) Loss of one of the redundant paths for the Caution and Warning Audio Tones from Caution and Warning Subunit #1.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Speaker Intercom Electronics.	b) None	b) None	b) IIIb	
Klaxon 61A850005 (1 of 2) 2.3.290 2.3.291 (The Klaxon provides speakers to produce the Audio Emergency Tones.)	M	a) Loss of speaker output (1 of 2)	a) A 3db drop in the Emergency Tone from the associated Klaxon.	a) There is a 3 db drop in output from the associated Klaxon.	a) None	a) N/A	----------
		b) Mechanical overstress of speaker cone.	b) None, due to redundant speakers.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Indicator light, Caution and Warning I.D. 610769007-5 (1 of 84) 2.3.292-2.3.375 (Provides the crew via a visual indication which parameter tripped the C&W System.)	M	a) Filament fails open.	a) None, due to redundancy provided by alternate indicator light powered by the alternate C&W Subunit.	a) During in-flight testing, one C&W Subunit will not light the indicator light of one channel.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None.	b) None.	b) None.	b) IIIb	
Caution & Warning Unit 61B350012 2.3.376 (The Caution and Warning Unit monitors sensors which in turn monitor the spacecraft systems and generates an appropriate alarm upon receiving a closure from a sensor.)	M	a) Loss of output from pin F, A, C, E, G, U, V, W, X, Y, Z_A, A_A, B, X, BB, S, T U, Y, E, I, E, G, H, Z, AA, BB CC, DD, EE, FF, GG, C, H, N, P, Q, R, P, or R f connector J5 or J6.	a) Loss of output to an AM type indicator light from one C&W Subunit.	a) During in-flight testing, one C&W Subunit will not light the indicator light of one channel.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by alternate C&W Subunit and alternate indicator light bulb.	b) None	b) None.	b) IIIb	
		a) Loss of output from pin J of connector J5 [J6]	a) Loss of crew's capability to reset Crew Alert Relay #1(2).	a) One of the two Master Alarm Status Lights on the Speaker Intercom fails to light when the C&W System is triggered.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, Ground can reset Crew Alert Relay #1(2)via CRDU command S177(S241).	b) Request Ground to reset Crew Alert Relay #1(2) via CRDU command S177 (S241).	b) Reset Crew Alert Relay #1(2) via CRDU command S177 (S241) upon Crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Caution and Warning Unit 61B850012 (Continued)	M	a) Loss of output from pin B, D, F, H, F, or D from connector J5 or J6.	a) Loss of output to CWS indicator light from one C&W Subunit	a) During in-flight testing, one C&W Subunit will not light the indicator light of one channel.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by alternate C&W Subunit and alternate indicator light bulb.	b) None	b) None.	b) IIIb	
		a) Loss of output from pin J of connector J5(J6).	a) Loss of C&W Subunit 1(2) capability to light the C&W System Master Alarm Telelight Switch.	a) During in-flight testing, C&W Subunit #1(2) will not light the Master Alarm Telelight Switch.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2(1) capability of lighting the Master Alarm Telelight Switch	b) None	b) None.	b) IIIb	
		a) Loss of output from pin L of connector J5(J6)	a) Loss of C&W Subunit #1(2) capability to light the CWS Master Alarm Telelight Switch	a) During in-flight testing, C&W Subunit #1(2) will not light the CWS Master Alarm Telelight Switch.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2(1) capability of lighting the CWS Master Alarm Telelight Switch.	b) None	b) None.	b) IIIb	
		a) Loss of output from pin N of connector J1(J3)	a) Loss of "C&W - Caution Closure I & II" T/M data.	a) None	a) T/M data will indicate no C&W Caution Closure I(II) but a C&W Caution Closure II(I).	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to T/M data C&W - Caution Closure II(I) from C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin M of connector J1(J3).	a) Loss of "C&W - Warning Closure I(II)" T/M data.	a) None	a) T/M data will indicate no C&W Warning Closure I(II), but a C&W Warning Closure II(I).	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to T/M data C&W Warning Closure II(I) from C&W Subunit #2(1).	b) None	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Caution & Warning Unit 61E350012 (Continued)	M	a) Loss of output from pin E, F or G of connector J1 (J3).	a) Caution Tone Volume from C&W Subunit #1(2) will decrease.	a) There will be approximately a 5 db drop in the Caution Tone.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) Increase the volume of the Caution Tone of C&W Subunit #2(1).	b) None	b) IIIb	
		a) Loss of output from pin H, J or K of connector J1(J3).	a) Warning Tone volume from C&W Subunit #1(2) will decrease.	a) There will be approximately a 5 db drop in the Warning Tone.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2(1)	b) Increase the volume of the Warning Tone of C&W Subunit #2(1).	b) None	b) IIIb	
		a) Loss of output from pin P or Q of connector J1 (J3).	a) Loss of C&W +28V Connector #1(2) T/M data.	a) None	a) T/M data will indicate loss of C&W +28 Connector #1(2) voltage.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to crew's capability to test the C&W Subunit #1(2) for proper operation.	b) Test C&W Subunit #1(2) for proper operation if requested by Ground.	b) Request crew to check C&W Subunit #1(2).	b) IIIb	
		a) Loss of output from pin R or S of connector J1 (J3).	a) Loss of C&W Connector #1(2) Logic voltage T/M data.	a) None	a) T/M data will indicate loss of C&W Connector #1(2) Logic Voltage.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to crew's capability to test the C&W Subunit #1(2) for proper operation.	b) Test C&W Subunit #1(2) for proper operation if requested by Ground.	b) Request crew to check C&W Subunit #1(2).	b) IIIb	
		a) Loss of output from pin M(N) of connector J1 or J3.	a) Loss of capability of C&W Subunit #1(2) to monitor Emergency Subunit 1 or 2.	a) None	a) T/M data will indicate a warning on C&W Subunit #2 (1) and not on C&W Subunit (1(2).	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W subunit #2(1).	b) None	b) Inform the crew of discrepancy	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Caution and Warning Unit 61B850012 (Continued)	M	a) Loss of output from pin A(L) of connector J1 or J3.	a) Loss of capability of C&W Subunit #1(2) to monitor C&W Subunit 1 or 2 power.	a) None	a) T/M data will indidate a Caution on C&W Subunit #2(1) and not on C&W Subunit#1(2).	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin D of connector J1 (J3).	a) Loss of C&W Subunit #1(2) 28V Control Voltage.	a) During in-flight testing, when the C&W System Test - Caution Switch is placed in the "1"(2) position on the C&W System Test - Warning Switch is placed in the "1"(2) position, there is no Caution or Warning Tone and the I.D. lights do not light.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2(1) 28V control voltage.	b) Verify that C&W Subunits are functioning properly. Request Ground to check CWU-CW +28 VDC Conv. 1(2) T/M data.	b) Upon request from crew, verify CWU-CW +28VDC Conv. 1(2) via T/M data.	b) IIIb	
		a) Loss of output from pin Z and M of connector J7(J8).	a) Loss of Emerg. Control Pwr #1(2), which results in the loss of Emergency Subunit #1(2).	a) During in-flight testing, Emergency Subunit #1(2) cannot be triggered via C&W System Test Δ P Switch or C&W System Test - Fire Switch.	a) T/M data will indicate an "Emergency" condition on one Emergency Subunit and not on the other.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Emergency Subunit #(2)(1).	b) None, continue mission using Emergency Subunit #2(1)	b) Inform crew of discrepancy.	b) IIIb	
		a) Loss of output from pin C of connector J7 (J8).	a) Loss of Emergency Conv. #1(2) +28V T/M data.	a) None	a) T/M data will indicate loss of Emergency Conv. #1(2) +28V.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to crew's capability to test Emergency Subunit #1 (2) for proper operation.	b) Test Emergency Subunit #1(2) for proper operation if requested by Ground.	b) Request crew to check Emergency Subunit #1(2).	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Caution and Warning Unit 615850012 (Continued)	M	a) Loss of output from pin E of connector J7(J8)	a) Loss of Emergency Convertor #1(2) logic voltage T/M data.	a) None	a) T/M data will indicate loss of Emergency Convertor #1(2) logic voltage.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to crew's capability to test Emergency Subunit #1 (2) for proper operation.	b) Test Emergency Subunit #1(2) for proper operation if requested by Ground.	b) Request crew to check Emergency Subunit #1(2).	b) IIIb	
		a) Loss of output from pin CC of connector J7(J8)	a) Emergency Tone Volume from Emergency Subunit #1(2) will decrease.	a) There will be approximately a 5 db drop in the Emergency Tone.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Emergency Subunit #2(1).	b) Increase the volume of the Emergency Tone of Emergency Subunit #2(1).	b) None.	b) IIIb	
		a) Loss of output from pin U, W, Y, A, R, or P of connector J7 or J8.	a) Loss of output to an AM Emergency Indicator Light from one Emergency Subunit.	a) During in-flight testing, one Emergency Subunit will not light the indicator light of one channel.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by alternate Emergency Subunit and alternate light bulb.	b) None	b) None	b) IIIb	
		a) Loss of output from pin V, X, Z, B, S, or Q of connector J7 or J8.	a) Loss of output to an OMS Emergency Indicator Light from one Emergency Subunit.	a) During in-flight testing, one Emergency Subunit will not light the indicator light of one channel.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by alternate Emergency Subunit and alternate light bulb.	b) None	b) None	b) IIIb	
		a) Loss of output from pin FF or GG of connector J7(J8).	a) Loss of Fire and Rapid $\Delta P/\Delta T$ Emergency Tones from Emergency Subunit #1(2).	a) During in-flight testing, there is no Emergency Fire and Rapid $\Delta P/\Delta T$ Tones from Emergency Subunit #1(2).	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Emergency Subunit #2(1).	b) None, continue mission using Emergency Subunit #2(1).	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Diode, blocking, for ACS MALF Indicator Lights 52-79728-1 (1 of 4) 2.3.378 2.3.379 2.3.380 2.3.381 (Provides isolation between the lamp drivers of the C&W Subunits.)	M	a) Short	a) None, function required only in event of prior failure.	a) None	a) None	a) N/A	----------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Open	a) The associated C&W Subunit fails to light the ACS MALF Indicator Light for the associated abnormality.	a) None	a) None	a) N/A	----------
		b) Defective bond, subjected to mechanical or thermal stress.	b) None, due to redundancy provided by alternate C&W Subunit.	b) None	b) None	b) IIIb	
Diode, blocking, C&W System Caution & Warning Test circuitry. (1 of 396) 2.3.332-2.3.717 (Provides isolation between the Inhibit Switches.)	M	a) Short	a) None, due to redundend diodes.	a) None	a) None	a) N/A	----------
		b) Contamination	b) None	b) None	b) None	b) IIIb	
		a) Open	a) The associated parameter on one of the C&W Subunits will not be triggered during in-flight testing.	a) During in-flight testing, the associated parameter on one C&W Subunit will not be triggered during in-flight testing.	a) None	a) N/A	----------
		b) Defective bond subjected to mechanical or thermal stress.	b) None, due to redundancy provided by alternate C&W Subunit.	b) Attempt to isolate failure to open test circuitry. Continue mission using alternate C&W Subunit to monitor the parameters.	b) None	b) IIIb	
Caution and Warning Signal Conditioner Primary (Secondary) Display Converter 610S00052 1 of 2 2.3.718 2.3.719 (Provides power to Instrumentation Package 1)	M	a) Loss of +5V, +24V, or -24V to Instrumentation Package 1 (2)	a) Loss of Instrumentation package 1(2) and associated inputs to C&W Subunit #1(2).	a) C&W Signal Conditioning I.D. light and Caution tone.	a) T/M data will indicate a "Caution" on C&W Subunit #2(1) and not on C&W Subunit #1(2).	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Signal Conditioner Secondary (Primary) Display Converter, Instrumentation Package 2(1) and C&W Subunit #2(1).	b) Place the C&W Signal Conditioning Inhibit Switch in the inhibit position.	b) Inform crew of discrepancy.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, magnetic Audio System - Crew Alert Call 2 52-79721-322 (11-28) 2.3.720 (Provides circuit protection for crew alert circuitry.)	M	a) Opens before break current is exceeded.	a) None, due to redundancy provided by Audio System Crew Alert Call 1 Circuit Breaker.	a) Bat handle is in the "off" position.	a) None	a) N/A	----------
		b) Internal defect coil shorts to Ground.	b) None	b) None	b) None	b) IIIb	
Circuit Breaker, magnetic, Crew Alert Call 1 52-79721-322 (11-27) 2.3.721	M	a) Opens before break current is exceeded.	a) Loss of capability of crew in CSM to activate the "Crew Alert" in remaining portion of the cluster.	a) Bat handle is in the "off" position. Crew does not respond to "Crew Alert" initiated in CSM.	a) None	a) N/A	----------
		b) Internal defect coil shorts to Ground.	b) None, crew can return to MDA and activate the Crew Alert or request Ground to activate the "Crew Alert".	b) Return to MDA to activate "Crew Alert" or request Ground to initiate the "Crew Alert".	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker magnetic, Antenna Control #1 (4-5) 52-79721-322 2.4.01 (Provides protection for antenna selection circuitry)	L M S	a) Opens before break current is exceeded b) Internal defect, coil shorts to ground	a) Loss of capability to switch the Discone Antenna Coax Switch from either the "Disc" position or the "Disc/Stub" position b) Possible degradation of T/M signal due to last switched antenna shadowing.	a) Circuit breaker's bat handle is in the "Off" position. b) None	a) Possible degradation of received T/M signal b) Maintain optimum antenna pattern via Launch/Orbit Ant. Coax Switch if the Discone Ant. Coax Switch is in the "Disc/Stub" position.	a) N/A b) IIIb	- - - - - - - - - -
Circuit Breaker Magnetic, Antenna Control #2 (4-6) 52-79721-322 2.4.02 (Provides protection for Antenna selection circuitry.)	L M S	a) Opens before break current is exceeded b) Internal defect, coil shorts to ground.	a) Loss of capability to switch the Launch/Orbit Antenna Coax Switch from either the "Discone #1" or "Stub" position. b) Possible degradation of T/M signal due to last switched antenna shadowing.	a) Circuit breaker's bat handle is in the "Off" position b) None	a) Possible degradation of received T/M signal b) Maintain optimum antenna pattern via Discone Ant. Coax Switch	a) N/A b) IIIb	- - - - - - - - - -
Filter, Panel Assy (Discone Switching Circuit or Launch/Orbit Switching Circuit) 61A762221 2.4.03 2.4.04	L M S	a) Coil opens (any 1 of 3).	a) Affected antenna switching circuit cannot be activated via manual or DCS command.	a) None.	a) Discone Ant. Coax. Switch position T/M data and degraded T/M data will indicate that switching did not occur.	a) N/A	- - - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible degradation of T/M signal due to antenna shadowing.	b) Provide visual readout by voice communication of available data as requested by ground.	b) Maintain communication with antenna available from last switched position and request crew to manually attempt switch antennas during manned phases.	b) IIIb	
(Provides T/M indication of state of Coax Switch and filter the power which switches the Coax Switch)		a) Resistor fails open (any 1 of 2)	a) Loss of Discone Ant. Coax. Switch or Launch Orbit Coax Switch position T/M data.	a) None	a) Loss of Discone Ant. Coax. Switch or Launch Orbit Coax Switch position T/M data.	a) N/A	- - - - - - - - - -
		b) Defective termination.	b) None, due to system checkout by monitoring RF signal.	b) None.	b) None, if RF signal received is satisfactory.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle Antenna 52-79705-21 2.4.05	L M S	a) Contact set (5.4) fails open in the "Cmd" position	a) Loss of ground capability to select the "Disc/Stub" position of the Discone Ant. Coax Switch via DCS.	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	- - - - - - - -
(Provides crew the capability of selecting either Discone Antenna #2 or Discone Antenna #1 the XMTR/RCVR Stub Antenna)	M	b) Insulating film on contact due to contamination	b) Possible degradation of T/M signal due to antenna shadowing.	b) Maintain optimum antenna configuration via manual selection of antennas upon Ground request.	b) Maintain communication with antenna available from last switched position. Request crew to manually switch antennas during manned phases	b) IIIb	
		a) Contact set (8, 9) or (11, 10) fails open in the "Disc position.	a) Loss of Crew capability to select Discone Antenna #2	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur	a) N/A	----------
		b) Insulating film on contact due to contamination	b) None, due to redundancy provided by Ground's capability to perform the switching function.	b) Select the "CMD" position of the Antenna Switch upon Ground request.	b) Perform function via DCS after requesting crew to select "CMD" position of switch.	b) IIIb	
		a) Contact set (8, 9) or (11, 12) fails open in the "Disc/Stub" position	a) Loss of Crew capability to select either Discone Antenna #1 or the XMTR/RCVR Sub Antenna	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination. Contact sets (2, 1), (2,3) (5,6) and (8,7) are spares	b) None, due to redundancy provided by Ground's capability to perform the switching function.	b) Select the "CMD" position of the Antenna Switch upon Ground request.	b) Perform function via DCS after requesting crew to select "CMD" position of switch.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, XMTR/RCVR Ant. Select (K4-3) 52-79703-41 (Continued)	L M S	a) Latch coil fails open.	a) Loss of Ground capability to select Discone Antenna #1	a) None	a) Launch/Orbit Antenna Coax Switch position T/M data will indicate that switching did not occur	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Disc 1" position of the Antenna Switch if requested by Ground	b) Request the crew to select the Discone Antenna #1	b) IIIb	
		a) Pole B fails open in the latch position	a) Loss of Ground capability to select Discone Antenna #1	a) None	a) Launch/Orbit Antenna Coax Switch position T/M data will indicate that switching did not occur	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Disc 1" position of the Antenna Switch if requested by Ground	b) Request the crew to select the Discone Antenna #1	b) IIIb	
		a) Pole B fails open in the reset position	a) Loss of Ground capability to select the XMTR/RCVR Stub Antenna	a) None	a) Launch/Orbit Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination Pole A is used for GSE only	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Stub" position of the Antenna Switch upon Ground request	b) Request the crew to select the Stub Antenna	b) IIIb	
Relay, Latching, Discone Ant. Select (K4-2) 52-79703-41 2.4.08 (Provides Ground capability to select either Discone Antenna #2 or the Launch/ Orbit Antenna Coax Switch)		a) Reset coil fails open	a) Loss of Ground capability to select the XMTR/RCVR Stub Antenna or Discone Antenna #1.	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Disc/Orbit" position of the Antenna Switch upon Ground request.	b) Request crew to select the Launch/Orbit Antenna Coax Switch	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, Discone Ant. Select (K4-2) 52-79703-41 (Continued)	L M S	a) Latch coil fails open.	a) Loss of Ground capability to select Discone Antenna #2	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Disc 2" position of the Antenna Switch upon Ground request.	b) Request crew to select Discone Antenna #2	b) IIIb	
		a) Pole B fails open in the reset position	a) Loss of Ground capability to select Discone Antenna #2	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Disc 2" position of the Antenna Switch upon Ground request.	b) Request crew to select Discone Antenna #2	b) IIIb	
		a) Pole B fails open in the latch position.	a) Loss of Ground capability to select the XMTR/RCVR Stub Antenna or Discone Antenna #2.	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination. Pole A is used for GSE only.	b) Possible degradation of T/M signal due to last switched antenna shadowing.	b) Select the "Disc/Orbit" position of the Antenna Switch upon Ground request.	b) Request crew to select the Launch/Orbit Antenna Coax Switch.	b) IIIb	
Relay, Latching, CSM S-Band Antenna Select #1 (K4-27) 52-79703-3 2.4.09 (Provides Ground capability to select CSM S-Band Antenna configuration.)	M	a) Latch coil fails open or Pole "B" fails open in Latch" position.	a) Loss of CSM S-Band select capability for Antennas "C" and "D" via DCS.	a) Unreliable voice communication with ground.	a) Unreliable communication with cluster via CSM S-Band antenna system	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) Possible degradation of CSM S-Band signal due to antenna shadowing.	b) Return to CSM and manually select desired antenna.	b) Request crew to manually select desired antenna.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching CSM S-Band Antenna Select #1 (K4-27) 52-79703-3 (Continued)	M	a) Reset coil fails open or Pole "B" fails open in "Reset" position.	a) Loss of CSM S-Band select capability for Antenna "A"	a) Unreliable voice communication with ground.	a) Unreliable communication with cluster via CSM S-Band Antenna System	a) N/A	- - - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination. Pole A is used only for CSE.	b) Possible degradation of CSM S-Band signal due to antenna shadowing.	b) Return to CSM and manually select desired antenna.	b) Request crew to manually select desired antenna	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay Latching CSM S-Band Antenna Select #2 (K4-28) 52-79703-45 2.4.10 (Provides Ground capability to select CSM S-Band Antenna Configuration.)	M	a) Latch coil fails open or Pole "B" fails open in "Latch" position.	a) Loss of CSM S-Band select capability for Antenna "D" via DCS.	a) Unreliable voice communication with ground.	a) Unreliable communication with cluster via CSM S-Band Antenna System.	a) N/A	- - - - - - - -
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) Possible degradation of CSM S-Band signal due to antenna shadowing.	b) Return to CSM and manually select desired antenna.	b) Request crew to manually select desired antenna.	b) IIIb	
		a) Reset coil fails open.	a) Loss of CSM S-Band select capability for Antenna "A" and "C" via DCS.	a) Unreliable voice communication with ground.	a) Unreliable communication with cluster via CSM S-Band Antenna System	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress	b) Possible degradation of CSM S-Band signal due to antenna shadowing.	b) Return to CSM and manually select desired antenna.	b) Request crew to manually select desired antenna.	b) IIIb	
		a) Pole "B" fails open in reset position.	a) Loss of CSM S-Band select capability for Antenna "C" via DCS.	a) Unreliable voice communication with ground.	a) Unreliable voice communication with cluster via S-Band Antenna System.	a) N/A	- - - - - - - - -
		b) Insulating film on contacts due to contamination	b) Possible degradation of CSM S-Band signal due to antenna shadowing.	b) Return to CSM and manually select desired antenna.	b) Request crew to manually select desired antenna.	b) IIIb	
		a) Pole "C" fails open in reset position.	a) Loss of CSM S-Band select capability for Antenna "A" via DCS.	a) Unreliable voice communication with ground.	a) Unreliable voice communication with cluster via S-Band Antenna System.	a) N/A	- - - - - - - -
		b) Insulating film on contacts due to contamination. Poles "A" and "D" are spares. No effect.	b) Possible degradation of CSM S-Band signal due to antenna shadowing.	b) Return to CSM and manually select desired antenna.	b) Request crew to manually select desired antenna.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, Magnetic, VHF XPNDR (4-34) 52-79721-322 2.4.11 (Provides circuit protection for the power circuitry for the Range Tone Transfer Assembly and VHF Transceiver Assembly.)	L S	a) Opens before break current is exceeded.	a) Loss of power to VHF Ranging System.	a) CSM digital Ranging System cannot process OWS signals.	a) T/M data indicates loss of VHF transponder power.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None. Rendezvous can be accomplished via ground radar and visual tracking.	b) Request ground radar track. Continue with visual rendezvous if possible.	b) Perform ground radar track.	b) IIIb	
Relay, Latching, VHF Transponder Primary (K4-29) 52-79703-3 (Provides Ground capability to power the Range Tone Transfer Assembly and the VHF Transceiver Assembly.)	L S	a) Latch coil fails open or Pole "B" fails open in "latch" position.	a) None, due to redundancy provided by VHF Transponder Relay, Secondary.	a) None	a) T/M data will indicate no VHF transponder power.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, Contamination.	b) None	b) None	b) Perform switching function via VHF Transponder Relay, Secondary and CRIU channel S296.	b) IIIb	
		a) Reset coil fails open.	a) None, due to redundancy provided by VHF Transponder Relay, Secondary.	a) None	a) T/M data will indicate that there is still VHF Transponder power.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A is used for GSE only.	b) None	b) None	b) Perform switching function via VHF Transponder Relay, Secondary and CRIU channel S297.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching VHF Transponder Secondary (K4-39) 52-79703-3 2.4.13 (Provided Ground capability to power the Range Tone Transfer Assembly and the VHF Transceiver Assembly.)	L S	a) Latch coil fails open or Pole "B" fails open in "latch" position.	a) None, due to redundancy provided by VHF Transponder Relay - Primary.	a) None	a) T/M data will indicate no VHF transponder power.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, Contamination.	b) None	b) None	b) Perform switching function via VHF Transponder Relay - Primary and CRDU channel S200.	b) IIIb	
		a) Reset coil fails open.	a) None, due to redundancy provided by VHF Transponder Relay - Primary.	a) None	a) T/M data will indicate that there is still VHF transponder power.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress. Pole A is used for GSE only.	b) None	b) None	b) Perform switching function via VHF Transponder Relay - Primary and CRDU channel S201.	b) IIIb	
Resistor, VHF Xpndr, Pwr Monitor Circuit RER52510001FM 2.4.14 (Provides data to T/M for VHF Transponder Power)	L M S	a) Open.	a) Loss of VHF Ranging System power T/M data.	a) None	a) T/M data indicates that power to ranging system disrupted, but VHF Receiver "AGC Volts" T/M data contradicts.	a) N/A	----------
		b) Defective termination.	b) None, due to T/M system checkout capability.	b) None	b) None, crew will inform ground if ranging system is not operational.	b) IIIb	
Discone Antenna Coax Switch 61B850013 2.4.15 (Discone Antenna Coax Switch provides switching capability between Discone Antenna #2 and Launch/Orbit Antenna Coax Switch.)	L M S	a) Coil opens or contacts fail open.	a) Loss of capability to select Discone Antenna #2.	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress contamination.	b) Possible degradation of T/M signal due to last switched Antenna shadowing.	b) None	b) Maintain communication with unaffected antennas.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Discone Antenna Coax Switch 61B350013 (Continued)	L	a) Coil opens or contacts fail open.	a) Loss of capability to select Launch/Orbit Antenna Coax Switch.	a) None	a) Loss of T/M signal.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress contamination.	b) Loss of T/M data until Discone Antennas are deployed.	b) None	b) None	b) IIIb	
	L M S	a) Coil opens or contacts fail open.	a) Loss of capability to select Launch/Orbit Antenna Coax Switch.	a) None	a) Discone Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) Possible degradation of T/M signal due to Discone Antenna #2 shadowing.	b) None	b) Maintain communication with unaffected antennas.	b) IIIb	
Launch/Orbit Antenna Coax Switch 61B350013 2.4.16 (Launch/Orbit Antenna Coax Switch provides switching capability between Stub Antenna and Discone Antenna #1)	L	a) Coil opens or contacts fail open.	a) Loss of capability to select the Stub Antenna.	a) None	a) Loss of T/M signal.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) Loss of T/M data until Discone Antennas are deployed.	b) None	b) None	b) IIIb	
	L M S	a) Coil opens or contacts fail open.	a) Loss of capability to select the Stub Antenna.	a) None	a) Launch/Orbit Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) None, due to Discone Antennas 1 & 2.	b) None	b) Maintain communication with unaffected antennas.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Launch/Orbit Antenna Coax Switch 61B850013 (Continued)	L M S	a) Coil opens or contacts fail open.	a) Loss of capability to select Discone Antenna #1.	a) None	a) Launch/Orbit Antenna Coax Switch position T/M data will indicate that switching did not occur.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) Possible degradation of T/M signal due to shadowing of last switched antenna.	b) None	b) Maintain communication with unaffected antennas.	b) IIIb	
Quadriplexer 52-85703 2.4.17 (The Quadriplexer provides isolation between the DCS Receiver Decoders and the telemetry transmitters so that one common antenna system can be used.)	L M S	a) Loss of output to DCS (P3)	a) Loss of input to 1 of 2 receivers in each DCS.	a) None	a) Signal to DCS may have to be repeated to accomplish task.	a) N/A	----------
		b) Open.	b) None. Due to redundancy provided by alternate antenna system to redundant DCS receivers.	b) None	b) Repeat signal to DCS if required.	b) IIIb	
		a) Loss of input/output for T/M transmitters (P1, P2, and P4) (any 1 of 3).	a) T/M data dump is disrupted from affected transmitter.	a) None	a) T/M data not received from affected T/M transmitter.	a) N/A	----------
		b) Open.	b) None. Due to redundant T/M transmitters.	b) Switch to an alternate T/M transmitter if requested by ground.	b) Switch required data dump to either of two alternate T/M transmitters via DCS.	b) IIIb	
		a) Loss of output P5 to Discone Antenna Coax Switch.	a) Total loss of T/M data.	a) None	a) Loss of T/M signal.	a) N/A	----------
		b) Open.	b) Early mission termination due to loss of T/M data.	b) None	b) Inform crew of loss of T/M data.	b) II	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
VHF Transceiver Assembly 61C850006 2.4.18 (The VHF Transceiver Assembly receives signals from the CSM ranging system and transmits appropriate responses from the RTFA to the CSM Ranging System.)	L S	a) Loss of output to ranging tone transfer assembly. (Any one of Pins 3, 4, and 78 of connector P1138 and Pins 4, 5, 8 and 9 of connector P1139).	a) Complete disruption of VHF ranging operation.	a) CSM digital ranging system cannot process OWS signals.	a) None	a) N/A	----
		b) Open.	b) None. Rendezvous can be accomplished via ground radar and visual tracking.	b) Inform ground of failure and request ground radar track. If possible continue with visual rendezvous.	b) Perform ground radar tracking per crew request.	b) IIIb	
		a) Loss of output to diplexer. (VHF)	a) Complete disruption of VHF ranging operation.	a) CSM digital ranging system cannot process OWS signals.	a) None.	a) N/A	----
		b) Open.	b) None. Rendezvous can be accomplished via ground radar and visual tracking.	b) Inform ground of failure and request ground radar track. If possible continue with visual rendezvous.	b) Perform ground radar tracking per crew request.	b) IIIb	
		a) Loss of output from diplexer to antenna or receiver section of VHF transceiver.	a) Complete disruption of VHF ranging operation.	a) CSM digital ranging system cannot process OWS signals.	a) None.	a) N/A	----
		b) Open.	b) None. Rendezvous can be accomplished via ground radar and visual tracking.	b) Inform ground of failure and request ground radar track. If possible continue with visual rendezvous.	b) Perform ground radar tracking per crew request.	b) IIIb	
		a) Loss of output of Pin 18 or 19.	a) Loss of VHF xponder AGC volts T/M data.	a) None.	a) Loss of VHF xponder AGC volts T/M data.	a) N/A	----
		b) Open.	b) None. Due to system checkout capability.	b) Check system via CSM digital ranging system.	b) Request crew to check system via CSM digital ranging system.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Ranging Tone Transfer Assembly 61C650005 2.4.19 (The Ranging Tone Transfer Assembly receives signals from the VHF Transceiver and returns an identical signal to the VHF Transceiver but delayed in time.)	L S	a) Loss of output to VHF transceiver (any one of Pins A, B, R, S, H, J, K, and F).	a) Complete disruption of VHF ranging operation.	a) CSM digital ranging system cannot process OWS signals.	a) None.	a) N/A	---
		b) Open.	b) None. Rendezvous can be accomplished via ground radar and visual tracking.	b) Inform ground of failure and request ground radar track. If possible continue with visual rendezvous.	b) Perform ground radar tracking per crew request.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit breaker, magnetic, Discone - Antenna Bus 1 Pwr. 1 (4-21) 52-79721-320 2.4.20 (Provides circuit protection for Discone Ant. #1 Release Actuator #1)	L	a) Opens before break current is exceeded.	a) Loss of Discone Ant #1 Release Actuator #1.	a) Circuit breaker's bat handle will be in the off position.	a) T/M data will indicate that Discone #1 is not deployed after executing CRDU command S24.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Discone Ant #1 Release Actuator #2	b) None	b) Perform function via CRDU command S126.	b) IIIb	
Circuit Breaker, magnetic, Discone Antenna Bus 1 Pwr 2 (4-22) 52-79721-320 2.4.21 (Provides circuit protection for Discone Ant. #2 Release Actuator #1.)	L	a) Opens before break current is exceeded.	a) Loss of Discone Ant. #2 Release Actuator #1.	a) Circuit breaker's bat handle will be in the off position.	a) T/M data will indicate that Discone #2 is not deployed after executing CRDU command S24.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Discone Ant #2 Release Actuator #2.	b) None	b) Perform function via CRDU command S126.	b) IIIb	
Circuit Breaker, magnetic, Discone - Antenna Bus 1 Cntl. (4-20) 52-79721-322 2.4.22 (Provides circuit protection for Release Relay #1.)	L M	a) Opens before break current is exceeded.	a) Loss of Crew capability to activate Discone Ant. #1 Release Actuator #1 and Discone Ant. #2 Release Actuator #1.	a) Circuit breaker's bat handle will be in the off position.	a) None	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Discone Ant #1 Release Actuator #2 and Discone Ant. #2 Release Actuator #2.	b) None	b) None	b) IIIb	
Circuit Breaker, magnetic, Discone Antenna Bus 2 Cntl. (4-23) 52-79721-322 2.4.23 (Provides circuit protection for Release Relay #2)	L M	a) Opens before break current is exceeded.	a) Loss of crew capability to activate Discone Ant. #1 Release Actuator #2 and Discone Ant. #2 Release Actuator #2.	a) Circuit breaker's bat handle will be in the off position.	a) None	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #1 and Discone Ant. #2 Release Actuator #1.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, magnetic, Discone - Antenna Bus 2 Pwr 1 (4-24) 52-79721-320 2.4.24 (Provides circuit protection for Discone ant. #1 Release Actuator #2.	L	a) Opens before break current is exceeded.	a) Loss of Discone Ant. #1 Release Actuator #2.	a) Circuit breaker's bat handle will be in the off position.	a) T/M data will indicate that Discone #1 is not deployed after executing CRDU command S126.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #1.	b) None	b) Perform function via CRDU command S24.	b) IIIb	
Circuit Breaker, magnetic, Discone - Antenna Bus 2 Pwr. 2 (4-25) 52-79721-320 2.4.25 (Provides circuit protection for Discone Ant. #2 Release Actuator #2.)	L	a) Opens before break current is exceeded.	a) Loss of Discone Ant. #2 Release Actuator #2.	a) Circuit breaker's bat handle will be in the off position.	a) T/M data will indicate that Discone #2 is not deployed after executing CRDU command S126.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by Discone Ant. #2 Release Actuator #1.	b) None	b) Perform function via CRDU command S24.	b) IIIb	
Relay, momentary, Release #1 (K4-20) 52-79703-43 2.4.26 (Activates Discone Ant. #1 Release Actuator #1 and Discone Ant. #2 Release Actuator #1.)	L M	a) Coil fails open.	a) Loss of Discone Ant. #1 Release Actuator #1 and Discone Ant. #2 Release Actuator #1.	a) None	a) T/M data will indicate that Discone Antenna 1 and 2 are not deployed after executing CRDU command S24.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #2 and Discone Ant. #2 Release Actuator #2.	b) None	b) Perform function via CRDU command S126.	b) IIIb	
		a) Pole B fails open.	a) Loss of Discone Ant. #2 Release Actuator #1.	a) None	a) T/M data will indicate that Discone #2 is not deployed after executing CRDU command S24.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Discone Ant. #2 Release Actuator #2.	b) None	b) Perform function via CRDU command S126.	b) IIIb	
		a) Pole C fails open.	a) Loss of Discone Ant. #1 Release Actuator #1.	a) None	a) T/M data will indicate that Discone #1 is not deployed after executing CRDU command S24.	a) N/A	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, Release #1 (K4-20) 52-79703-43 (Continued)	L M	b) Insulating film on contacts due to contamination. Pole A is used for GSE only. Pole D is a spare.	b) None, due to redundancy provided by Discone Ant. #2 Release Actuator #2.	b) None.	b) Perform function via CRDU command S126.	b) IIIb	
Relay, momentary, Release #2 (K4-21) 52-79703-43 2.4.27 (Activates Discone Ant. #1 Release Actuator #2 and Discone Ant. #2 Release Actuator #2.)	L M	a) Coil fails open.	a) Loss of Discone Ant. #1 Release Actuator #2 and Discone Ant. #2 Release Actuator #2.	a) None.	a) T/M data will indicate that Discone Antenna 1 and 2 are not deployed after executing CRDU command S126.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #1 and Discone Ant. #2 Release Actuator #1.	b) None.	b) Perform function via CRDU command S24.	b) IIIb	
		a) Pole B fails open.	a) Loss of Discone Ant. #2 Release Actuator #2.	a) None.	a) T/M data will indicate that Discone #2 is not deployed after executing CRDU command S126.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Discone Ant. #2 Release Actuator #1.	b) None	b) Perform function via CRDU command S24.	b) IIIb	
		a) Pole C fails open.	a) Loss of Discone Ant. #1 Release Actuator #2.	a) None	a) T/M data will indicate that Discone #1 is not deployed after executing CRDU command S126.	a) N/A	----------
		b) Insulating film on contacts due to contamination. Pole A is used for GSE only. Pole D is a spare.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #1.	b) None	b) Perform function via CRDU command S24.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, toggle, Antenna 52-79705-133 2.4.28 (Provides crew and Ground capability to deploy the Discone Antennas.)	L M	a) Contact set (2,3) [(5,6)] fails open in the "Cmd" position.	a) Loss of Ground capability to activate Discone Ant. #1 Release Actuator #1(2) and Discone Ant. #2 Release Actuator #1(2).	a) None	a) T/M data will indicate that Discone Antenna 1 and 2 are not deployed after executing CRDU command S24(S126).	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #2(1) and Discone Ant. #2 Release Actuator #2(1).	b) None	b) Perform function via CRDU command S126 (S24).	b) IIIb	
		a) Contact set (2,1) [(5,4)] fails open in the "Deploy" position.	a) Loss of crew capability to activate Discone Ant. #1 Release Actuator #1(2) and Discone Ant. #2 Release Actuator #1(2).	a) None	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #2(1) and Discone Ant. #2 Release Actuator #2(1).	b) None	b) None	b) IIIb	
Transmitter Coax Switch 61B350013 2.4.29 (Provides switching capability to connect either the 2 watt or 10 watt T/M transmitter to the Quadriplexer.)	L M S	a) Coil opens or contacts fail open.	a) Loss of capability to connect the Two watt, Ten watt, T/M Transmitter to the Quadriplexer.	a) None	a) Transmitter Coax Switch T/M data will indicate that switching did not occur.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress, contamination.	b) None, due to redundant T/M transmitters.	b) None.	b) Select alternate 10 watt T/M transmitter. If during critical altitude of Launch, wait until venting has occured, then select alternate 10 watt T/M transmitter.	b) IIIb	
Circuit Breaker, magnetic, Television Pwr. - AM (4-50) 52-79721-322 2.4.30 (Provides circuit protection for the Lock TV Station.)	M	a) Opens before break current is exceeded.	a) Loss of capability to operate the portable T.V. camera from the AM Lock TV Station.	a) Portable T.V. camera fails to function from the Lock T.V. Station.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to alternate TV Stations.	b) Select alternate T.V. Station.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION d) ACTION	GROUND a) INDICATION b) ACTION	e) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, magnetic, Television ATM Video (4-57) 52-79721-322 2.4.31 (Provides circuit protection for the MDA/AM/CWS T.V. channel.)	M	a) Opens before break current is exceeded.	a) Loss of capability to operate a portable T.V. camera from the MDA/AM/CWS channel.	a) Portable T.V. camera fails to function on the MDA/AM/CWS channel.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to alternate T.V. Station	b) Select alternate T.V. Station.	b) None	b) IIIb	
Circuit Breaker, magnetic, Television Pwr - MDA (4-58) 52-79721-322 2.4.32 (provides circuit protection for the ATM channels)	M	a) Opens before break current is exceeded.	a) Loss of ATM T.V. channels.	a) TV cameras fail to function on the ATM channels.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundant T.V. stations.	b) Select alternate T.V. stations.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit breaker, magnetic, Time Reference Electronics - Sec (4-27) 52-79721-322 2.5.01 (Provides circuit protection for the Secondary Electronic Timer.)	L M S	a) Opens before break current is exceeded.	a) Loss of Secondary Electronic Timer.	a) Affected circuit breaker's "Bat Handle" will be in the "off" position.	a) T/M data will indicate loss of output from the Secondary Electronic Timer.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundant Electronic Timer.	b) None	b) Select the Primary Electronic Timer via DCS, update, and continue mission.	b) IIIb	
Circuit breaker, magnetic, Time Reference Electronic - Pri. (4-28) 2.5.02 (Provides circuit protection for the Primary Electronic Timer.)	L M S	a) Opens before break current is exceeded.	a) Loss of Primary Electronic Timer.	a) Affected circuit breaker's "Bat Handle" will be in the "off" position.	a) T/M data will indicate loss of output from the Primary Electronic Timer.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundant Electronic Timers.	b) None	b) Select the Secondary Electronic Timer via DCS, update, and continue mission.	b) IIIb	
Relay, Latching GMT Reset Arm (K4-32) 52-79703-61 2.5.03 (Provides capability via CSDU to arm the GMT reset function of the Electronic Timers.)	M	a) Latch coil fails open.	a) Loss of Ground capability to reset the Time Correlation Buffer to Greenwich Mean Time.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to crew's capability of resetting the Time Correlation Buffer.	b) Inform Ground of discrepancy. Reset the Time Correlation Buffer to Greenwich Mean Time via Time Reference System 24 Hour Switch.	b) Attempt to reset function via alternate Electronic Timer.	b) IIIb	
		a) Reset coil fails open.	a) Loss of elapsed time data from Digital Display Units.	a) The Digital Display Units will be reset everytime the "TX" function is executed by the Electronic Timer.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to elapsed time data available from Ground.	b) Obtain elapsed time data from Ground and/or Digital Clock.	b) Provide elapsed time data if requested by Crew.	b) IIIb	
		a) Contact set B(C) fails open.	a) Loss of Ground capability to reset the Time Correlation Buffer to Greenwich Mean Time via Secondary (Primary) Electronic Timer.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None	a) N/A	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching GMT Reset Arm (K4-32) 52-79703-61 (Cont'd.)	M	b) Insulating film on contacts due to contamination.	b) None, due to redundant Electronic Timers.	b) Inform Ground of discrepancy.	b) Select alternate Electronic, Timer, update and continue mission.	b) IIIb	
Switch, momentary, Time Reference System 24 Hr. Switch 610769014-3 2.5.04 (Provides crew capability to reset the Time Correlation Buffers to Greenwich Mean Time.)	M	a) Contact set (2,1) [(3,4)] fails open.	a) Loss of crew capability to reset the Time Correlation Buffers to Greenwich Mean Time via Primary (Secondary) Electronic Timers.	a) The Digital Display Units are not reset to Greenwich Mean Time when the switch is placed in the "Zero Reset" position.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 3) and (5,6) are spares.	b) None, due to Ground's capability to reset the Time Correlation Buffers via CRDU channel S294.	b) Inform Ground of failure and ask Ground to perform the function via CRDU.	b) Reset the Time Correlation Buffers via CRDU channel S294 upon crew request.	b) IIIb	
Relay, latching, Electronic Timer Select #5 (K4-45) 52-79703-61 2.5.05 (Provides Ground the capability to select either the Primary or Secondary Electronic Timer.)	L M S	a) Latch coil fails open.	a) Loss of capability to power the Secondary Electronic Timer via Electronic Timer Select Relay #5.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Secondary Electronic Timer is not powered.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by Electronic Timer Select Relay #6.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #6.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to power the Primary Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Primary Electronic Timer is not powered.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		a) Pole B fails open in the latch position.	a) Loss of data transfer from the Secondary Electronic Timer to the Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #6.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #6.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, Electronic Timer Select #5 (Continued)	L M S	a) Pole B fails open in the reset position.	a) Loss of data transfer from the Primary Electronic Timer to the Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform crew of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		a) Pole C fails open in the latch position.	a) Loss of capability to reset the Time Correlation Buffers to Greenwich Mean Time.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #6.	b) IIIb	
		a) Pole C fails open in the reset position.	a) Loss of capability to reset the Time Correlation Buffers to Greenwich Mean Time.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		a) Pole D fails open in the latch position.	a) Loss of capability to power the Secondary Electronic Timer via Electronic Timer Select Relay #5.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Secondary Electronic Timer is not powered.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #6.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #6.	b) IIIb	
		a) Pole D fails open in the reset position.	a) Loss of capability to power the Secondary Electronic Timer via Electronic Timer Select Relay #6.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Secondary Electronic Timer is not powered.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to capability to power the Secondary Electronic Timer via Pole D in the latch position of Electronic Timer Select Relay #5.	b) Inform Ground of discrepancy.	b) Power Secondary Electronic Timer by Electronic Timer Select Relay #5 in the latch position.	b) IIIb	
		a) Pole E fails open in the reset position.	a) Loss of capability to power the Primary Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Primary Electronic Timer is not powered.	a) N/A	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, Electronic Timer Select #5 (Continued)	L M S	b) Insulating film on contacts due to contamination. Pole A is used for GSE only. Pole F is a spare.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
Relay, latching, Electronic Timer Select #6 (K4-43) 52-79703-61 2.5.06 (Provides Ground the capability to select either the Primary or Secondary Electronic Timer.)	L M S	a) Latch coil fails open.	a) Loss of capability to power the Secondary Electronic Timer via Electronic Timer Select Relay #6.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Secondary Electronic Timer is not powered.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by Electronic Timer Select Relay #5.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #5.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to power the Primary Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Primary Electronic Timer is not powered.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		a) Pole B fails open in the reset position.	a) Loss of data transfer from the Primary Electronic Timer to the Time Correlation Buffers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		a) Pole C fails open in the reset position.	a) Loss of capability to reset the Time Correlation Buffer to Greenwich Mean Time via Primary Electronic Timer.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, Electronic Timer Select #6 (K4-43) 52-79703-61 (Continued)	L M S	a) Pole D fails open in the latch position.	a) Loss of capability to power the Secondary Electronic Timer via Electronic Timer Select Relay #6 if the Electronic Timer Select Relay #5 is in the reset position.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Secondary Electronic Timer is not powered.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #5.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #5.	b) IIIb	
		a) Pole E fails open in the reset position.	a) Loss of capability to power the Primary Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) T/M data will indicate that the Secondary Electronic Timer is not powered.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		a) Pole B fails open in the reset position.	a) Loss of capability of data transfer from the Secondary Electronic Timer to the Time Correlation Buffers if the Electronic Timer Select Relay #5 is in the reset position.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #5.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #5.	b) IIIb	
		a) Pole C fails open in the latch position.	a) Loss of capability to reset the Time Correlation Buffer to Greenwich Mean Time if the Electronic Timer Select Relay #5 is in the reset position.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #5.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #5.	b) IIIb	
		Pole A is used for GSE only.					
		Pole F is a spare.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, Electronics Timer Select #7 (K4-46) 52-79703-61 2.5.07 (Provides Ground the capability of connecting the data output of either the Primary or Secondary Electronic Timer to the Time Correlation Buffers.)	M	a) Latch coil fails open.	a) Loss of capability to connect the data output from the Secondary Electronic Timer to the Time Correlation Buffers via Electronic Timer Select Relay #7.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by Electronic Timer Select Relay #8.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Select Relay #8.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to connect the data output from the Primary Electronic Timer to the Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue the mission.	b) IIIb	
		a) Pole B, C, D, or E fails open in the latch position.	a) Loss of capability to connect the data output from the Secondary Electronic Timer to the Time Correlation Buffers via Electronic Timer Select Relay #7.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #8.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #8.	b) IIIb	
		a) Pole B, C, D or E fails open in the reset position.	a) Loss of capability to connect the data output from the Primary Electronic Timer to the Time Correlation Buffers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue the mission.	b) IIIb	
		Pole A is used for GSE only.					
		Pole F is a spare.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, Electronic Timer Select #8 (K4-44) 52-79703-61 2.5.08 (Provides Ground the capability of connecting the data output of either the Primary or Secondary Electronic Timer to the Time Correlation Buffers.)	M	a) Latch coil fails open.	a) Loss of capability to connect the data output from the Secondary Electronic Timer to the Time Correlation Buffers via Electronic Timer Select Relay #8.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Electronic Timer Select Relay #7.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #7.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to connect the data output from the Primary Electronic Timer to the Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue the mission.	b) IIIb	
		a) Pole B, C, D or E fails open in the latch position.	a) Loss of capability to connect the data output from the Secondary Electronic Timer to the Time Correlation Buffer if the Electronic Timer Select Relay #7 is in the reset position.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Electronic Timer Select Relay #7.	b) Inform Ground of discrepancy.	b) Perform switching function via Electronic Timer Select Relay #7.	b) IIIb	
		a) Pole B, C, D or E fails in the reset position.	a) Loss of capability to connect the data output from the Primary Electronic Timer to the Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Electronic Timer.	b) Inform Ground of discrepancy.	b) Select the Secondary Electronic Timer, update, and continue mission.	b) IIIb	
		Pole A is used for GSE only.					
		Pole F is a spare.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, TCB Select #1 (K4-47) 52-79703-61 2.5.09 (Provides capability for the crew to connect either the Primary or Secondary Time Correlation Buffer to the Electronic Timers.)	M	a) Latch coil fails open.	a) Loss of capability to connect the Secondary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole B fails open in the latch position.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole B fails in the reset position.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timer.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole D fails open in the latch position.	a) Loss of data transfer from the Electronic Timers to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole D fails open in the reset position.	a) Loss of data transfer from the Electronic Timer to the Primary Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, Latching, TCB Select #1 (K4-47) 52-79703-61 (Continued)	M	a) Pole E fails open in the latch position.	a) Loss of capability of the Electronic Timers to reset the Secondary Time Correlation Buffer to Greenwich Mean Time.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch. Manually reset the system via Time Rference System 24 hr. switch.	b) None	b) IIIb	
		a) Pole E fails open in the reset position.	a) Loss of capability of the Electronic Timers to reset the Primary Time Correlation Buffer to Greenwich Mean Time.	a) The Digital Display Units are not reset to Greenwich Mean Time.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch. Manually reset the system via Time Reference System 24 hr. switch.	b) None	b) IIIb	
		Pole A is used for GSE only.					
		Poles C and F are spares.					
Relay, momentary, TCB Select Control #1 (K4-53) 52-79715-13 2.5.10 (Controls the switching of the TCB Select #1 Relay.)	M	a) Coil fails open.	a) Loss of capability to connect the alternate Time Correlation Buffer to the Electronic Timers.	a) When the alternate Time Correlation Buffer is selected, elapsed time data from the Digital Display Units will be lost.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) Select the other Time Correlation Buffer via the Time Reference Buffer Switch.	b) None	b) N/A (Multiple Failures Required)	
		a) Pole A fails open.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole B fails open.	a) Loss of capability to connect the Secondary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units	a) None	a) N/A	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, TCB Select Control #2 (K4-53) 52-79715-13 (Continued)	M	b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
Relay, latching, TCB Select #2 (K4-48) 52-79703-61 2.5.11 (Provides capability for the crew to connect either the Primary or Secondary Time Correlation Buffer to the Electronic Timers.)	M	a) Latch coil fails open.	a) Loss of capability to connect the Secondary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "pri" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole B fails open in the reset position, pole C, D, E, or F fails open in the latch position.	a) Loss of capability to connect the Secondary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None	b) IIIb	
		a) Pole B fails open in the latch position, pole C, D, E or F fails open in the reset position.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of of the Time Reference Buffer Switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary TCB Select Control #2 K4-54 52-79715-13 2.5.12 (Controls the switching of the TCB Select Relay #2).	M	a) Coil fails open.	a) Loss of capability to connect the alternate Time Correlation Buffer to the Electronic Timers.	a) When the alternate Time Correlation Buffer is selected, elapsed time data from Digital Display Units will be lost.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, function is required only in event of prior failure	b) Select the other Time Correlation Buffer via the Time Reference Buffer Switch.	b) None	b) N/A (Multiple Failures Required)	
		a) Pole A fails open.	a) Loss of capability to connect the Primary Time Correlation Buffer to the Electronic Timers.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability to connect the Secondary Time Correlation Buffer to the Electronic Timers	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffers.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
Switch, toggle, Time Reference System Buffer 52-79705-103 2.5.13 (Provides crew capability to select either the Primary Time Correlation Buffer or the Secondary Time Correlation Buffer.)	M	a) Contact set (2,3) or (8,9) fails open.	a) Loss of output from the Primary Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Contact set (5,4) or (11,10) fails open.	a) Loss of output from the Secondary Time Correlation Buffer.	a) Loss of elapsed time data from the Digital Display Units.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		Contact sets (2,1) (5,6)(8,7) and (11,12) are spares.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Switch, momentary, Day Count-Day 61C769014-3 2.5.14 (Provides crew capability to advance the day counter of the Time Correlation Buffer by one day increments.)	M	a) Contact set (5,4) [(2,1)] fails open.	a) Loss of crew capability to advance the Primary (Secondary) Time Correlation Buffer day register by one day increments.	a) Elapsed Time of the Digital Display Units does not increase by one day.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 3) and (5,6) are spares.	b) None, due to redundancy provided by the Secondary Primary Time Correlation Buffer.	b) Select alternate Time Correlation Buffer, update.	b) None	b) IIIb	
Switch, momentary, Day Count - 10 Day. 61C769014-3 2.5.15 (Provides crew capability to advance the day counter of the Time Correlation Buffer by 10 day increments.)	M	a) Contact set (5,4) [(2,1)] fails open.	a) Loss of crew capability to advance the Primary (Secondary) Time Correlation Buffer day counter by 10 day increments.	a) Elapsed Time of the Digital Display Unit does not increase by 10 day increments.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 3) and (5,6) are spares.	b) None, due to redundancy provided by the one day increment switch.	b) Advance the day counter via the one day increment switch.	b) None	b) IIIb	
Switch, momentary, Day Count 100 Day 61C769014-3 2.5.16 (Provides crew capability to advance the day counter of the Time Correlation Buffer by 100 day increments.)	M	a) Contact set (5,4) [(2,1)] fails open.	a) Loss of crew capability to advance the Primary (Secondary) Time Correlation Buffer day counter by 100 day increments.	a) Elapsed Time of the Digital Display Units does not increase by 100 day increments.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination. Contact sets (2, 3) and (5,6) are spares.	b) None, due to redundancy provided by the 10 day increment switch.	b) Advance the day counter via the 10 day increment switch.	b) None	b) IIIb	
Relay, latching, TCB Select #5 (K4-51) 52-79703-61 2.5.17 (Provides capability to connect the CWS Digital Display Unit to either the Primary or Sec. Time Cor. Buffer)	M	a) Latch coil fails open.	a) Loss of capability to connect the CWS Digital Display Unit to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit when the Secondary Time Correlation Buffer is selected.	a) None	a) N/A	----------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, TCB Select #5 (K4-51) 52-79703-61 (Continued)	M	b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to connect the CWS Digital Display Unit to the Primary Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit when the Primary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open in the reset position, pole C, D, E, or F fails open in the latch position.	a) Loss of capability to connect the CWS Digital Display Unit to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open in the latch position, pole C, D, E, or F fails open in the reset position.	a) Loss of capability to connect the CWS Digital Display Unit to the Primary Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination. Pole A is used for GSE only.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, TCB Select Control #5 (K4-57) 52-79715-13 2.5.18 (Controls the switching of the TCB Select Relay #5).	M	a) Coil fails open.	a) Loss of capability to connect the CWS Digital Display Unit to the alternate Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit when the alternate Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, function is required only in the event of prior failure.	b) Select the other Time Correlation Buffer via the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole A fails open.	a) Loss of capability to connect the CWS Digital Display Unit to the Primary Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit when the alternate Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability to connect the CWS Digital Display Unit to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data on the CWS Digital Display Unit when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
Relay, latching, TCB Select #6 (K4-52) 52-79703-61 2.5.19 (Provides capability to connect the AM Digital Display Unit to either the Primary or Secondary Time Correlation Buffer.)	M	a) Latch coil fails open.	a) Loss of capability to connect the AM Digital Display Unit to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data on the AM Digital Display Unit when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to connect the AM Digital Display Unit to the Primary Time Correlation Buffer.	a) Loss of elapsed time data on the AM Digital Display Unit when the Primary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, TCB Select #6 (K4-52) 52-79703-61 2.5.19 (Continued)	M	a) Pole B fails open in the reset position, pole C, D, E, or F fails open in the latch position.	a) Loss of capability to connect the AM Digital Display Unit to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data on the AM Digital Display Unit.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination. Pole A is used for GSE only.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
Relay, momentary, TCB Select Control #6 (K4-58) 52-79715-13 2.5.20 (Controls the switching of the TCB Select Relay #6).	M	a) Coil fails open.	a) Loss of capability to connect the AM Digital Display Unit to the alternate Time Correlation Buffer.	a) Loss of elapsed time data on the AM Digital Display Unit when the alternate Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, function is required only in the event of prior failure.	b) Select the other Time Correlation Buffer via the Time Reference Buffer Switch.	b) None.	b) N/A (Multiple Failures Required)	
		a) Pole A fails open.	a) Loss of capability to connect the AM Digital Display Unit to the Primary Time Correlation Buffer.	a) Loss of elapsed time data on the AM Digital Display Unit.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability to connect the AM Digital Display Unit to the Secondary Time Correlation Buffer.	a) Loss of elapsed time data on the AM Digital Display Unit when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, TCB Select #3 (K4-49) 52-79715-13 2.5.21 (Provides capability to provide EREP elapsed time data from either the Primary or Secondary Time Correlation Buffer.)	M	a) Latch coil fails open.	a) Loss of capability to provide elapsed time data to EREP from the Secondary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Reset coil fails open.	a) Loss of capability to provide elapsed time data to EREP from the Primary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Primary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open in the reset position, pole C or D fails open in the latch position.	a) Loss of capability to provide elapsed time data to EREP from the Secondary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open in the latch position, pole C or D fails open in the reset position .	a) Loss of capability to provide elapsed time data to EREP from the Primary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		Pole A is used for GSE only. Poles E and F are spares.					

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW c) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, TCB Select Control #3 (K4-55) 52-79715-13 2.5.22 (Controls the switching of the TCB Select Relay #3)	M	a) Coil fails open.	a) Loss of capability to connect the Elapsed Time Display on the EREP C&D Panel to the alternate Time Correlation Buffer.	a) Loss of elapsed time data on the Elapsed Time Display on the EREP C&D Panel when the alternate Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, function is required only in the event of prior failure.	b) Select the other Time Correlation Buffer via the Time Reference Buffer Switch.	b) None.	b) N/A (Multiple Failures Required)	
		a) Pole A fails open.	a) Loss of capability to provide elapsed time data to EREP from the Primary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Primary Time Correlation Buffer	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability to provide elapsed time data to EREP from the Secondary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
Relay, latching, TCB Select #4 (K4-50) 52-79703-61 2.5.23 (Provides capability to provide EREP elapsed time data from either the Primary or Secondary Time Correlation Buffer.)	M	a) Latch coil fails open.	a) Loss of capability to provide elapsed time data to EREP from the Secondary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, latching, TCB Select #4 (K4-50) 52-79703-61 (Continued)	M	a) Reset coil fails open.	a) Loss of capability to provide elapsed time data to EREP from the Primary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Primary Time Correlation Buffer is selected.	a) None	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open in the reset position, pole C, D, E or F fails open in the latch position.	a) Loss of capability to provide elapsed time data to EREP from the Secondary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel.	a) None.	a) N/A	----------
		b) Insulating film on the contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open in the latch position, pole C, D, E or F fails open in the reset position.	a) Loss of capability to provide elapsed time data to EREP from the Primary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel.	a) None.	a) N/A	----------
		b) Insulating film on the contacts due to contamination. Pole A is used for GSE only.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
Relay, momentary, TCB Select Control #4 (K4-56) 52-79715-13 2.5.24 (Controls the switching of the TCB Select Relay #4.)	M	a) Coil fails open.	a) Loss of capability to connect the Elapsed Time Display on the EREP C&D Panel to the alternate Time Correlation Buffer.	a) Loss of elapsed time data on the Elapsed Time Display on the EREP C&D Panel when the alternate Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, function is required only in the event of prior failure.	b) Select the other Time Correlation Buffer via the Time Reference Buffer Switch.	b) None.	b) N/A (Multiple Failures Required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Relay, momentary, TCB Select Control #4 (K4-56) 52-79715-13 (Continued)	M	a) Pole A fails open.	a) Loss of capability to provide elapsed time data to EREP from the Primary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Primary Time Correlation Buffer is selected.	a) None	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
		a) Pole B fails open.	a) Loss of capability to provide elapsed time data to EREP from the Secondary Time Correlation Buffer.	a) Loss of elapsed time on the Elapsed Time Display on the EREP C&D Panel when the Secondary Time Correlation Buffer is selected.	a) None.	a) N/A	----------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference Buffer Switch.	b) None.	b) IIIb	
Circuit Breaker, magnetic, Time Reference System Buffer Pri. (4-59) 52-79721-322 2.5.25 (Provides circuit protection for the power circuitry for the Primary Time Correlation Buffer.)	M	a) Opens before break current is exceeded.	a) Loss of power to the Primary Time Correlation Buffer.	a) Circuit breaker's bat handle is in the "off" position. Loss of elapsed time on the Digital Display Units if the Time Reference System Buffer Switch is in the "Pri" position.	a) None.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by the Secondary Time Correlation Buffer.	b) Select the "Sec" position of the Time Reference System Buffer Switch.	b) None.	b) IIIb	
Circuit Breaker, magnetic, Time Reference System Buffer Sec. (4-60) 52-79721-322 2.5.26 (Provides circuit protection for the power circuitry for the Secondary Time Correlation Buffer.)	M	a) Opens before break current is exceeded.	a) Loss of power to the Secondary Time Correlation Buffer.	a) Circuit breaker's bat handle is in the "off" position. Loss of elapsed time on the Digital Display Units if the Time Reference System Buffer Switch is in the "Sec" position.	a) None.	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by the Primary Time Correlation Buffer.	b) Select the "Pri" position of the Time Reference System Buffer Switch.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Circuit Breaker, magnetic, Time Reference System Clock (4-61) 52-79721-322 2.5.27 (Provides circuit protection for the power circuitry for the AM Digital Display Unit.)	M	a) Opens before break current is exceeded.	a) Loss of elapsed time display on the AM Digital Display Unit	a) Circuit breaker's bat handle will be in the "off" position.	a) None	a) N/A	----------
		b) Internal defect, coil shorts to ground.	b) None, due to redundancy provided by the OWS Digital Display Unit.	b) Obtain elapsed time information from the OWS Digital Display Unit.	b) None	b) IIIb	
Digital Display Unit - AM 61B350021 2.5.28 (Provides a visual display of elapsed time data.)	M	a) Loss of all or partial visual display of elapsed time.	a) Loss of all or partial elapsed time data from the AM Digital Display Unit.	a) Loss of all or partial visual display of elapsed time on the AM Digital Display Unit.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, the digital display unit is in-flight replaceable.	b) Replace AM Digital Display Unit with the spare Digital Display Unit.	b) None	b) IIIb	
		a) Incorrect elapsed time displayed.	a) Loss of correct elapsed time data from the AM Digital Display Unit.	a) Elapsed time on the AM Digital Display Unit is different from the OWS Digital Display Unit.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, the digital display unit is in-flight replaceable.	b) Confirm from Ground that the AM Digital Display Unit is faulty, replace with spare Digital Display Unit.	b) Provide correct elapsed time data to crew if required.	b) IIIb	
Time Correlation Buffer Primary (Secondary) 61B350020 (1 of 2) 2.5.29A, 2.5.29B (Provides elapsed time data to the Digital Display Units and to the EREP.)	M	a) Loss of output from pins B, A, H, G, E, D, K, L, NP, S, T, V or W of connector J2 or Pin D of connector J4.	a) Loss of elapsed time data on the associated Digital Display Unit and to EREP.	a) Loss of elapsed time data on the associated Digital Display Unit and on the Elapsed Time Indicator on the EREP C&D Panel.	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) Time Correlation Buffer.	b) Select the "Sec" ("Pri") position of the Time Reference System Buffer Switch.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Time Correlation Buffer Primary (Secondary) 61E850020 (Continued)	M	a) Erroneous elapsed time data to the Digital Display Units.	a) Digital Display Units elapsed time will differ from the Digital Clock and Portable Timer.	a) Elapsed time on the Digital Display Units will differ from that of the Digital Clock and Portable Timer.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) Time Correlation Buffer.	b) Request crew for correct elapsed time data. Select the "Sec" ("Pri") position of the Time Reference System Buffer Switch.	b) Provide crew with elapsed time data, if requested.	b) IIIb	
		a) Loss of 12V output from pin R of connector J4.	a) Loss of capability to update the elapsed time register of the Primary (Secondary) Time Correlation Buffer.	a) When any one of the three Day Count Switch is placed in the "Increase" position, the elapsed time on the Digital Display units is not increased.	a) None.	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Secondary (Primary) Time Correlation Buffer.	b) Select the "Sec" ("Pri") position of the Time Reference System Buffer Switch.	b) None.	b) IIIb	

ANALYSIS OF SECOND FAILURES

COMMUNICATIONS SYSTEM

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares.)	M	a) Contact Set (30, 31) of Switch S2, Channel Select, fails open.	a) None, due to redundant contacts, if S2 is switched slowly.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares.)	M	a) Contact set (30, 32) of Switch S2, Channel Select, fails open.	a) Loss of capability to select Channel A on the associated S.I.A.	a) Crew cannot select Channel A of affected S.I.A.	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to in-flight capability to replace failed S.I.A.	b) Replace defective S.I.A. with a spare S.I.A.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact Set (30, 34) of switch S2, Channel Select, fails open.	a) None, due to redundant contacts, if S2 is switched slowly.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Insulating film or contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (30, 33) of switch S2, Channel Select fails open.	a) Loss of capability to select Channel B on the associated S.I.A.	a) Crew cannot select Channel B of affected S.I.A.	a) None	a) N/A	- - - - - - - - -
		b) Insulating film or contacts due to contamination.	b) None, due to in-flight capability to replace failed S.I.A.	b) Replace defective S.I.A. with a spare S. I. A.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			F I R S T F A I L U R E				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (2, 1) of Switch S3, Tape Recorder Switch fails open.	a) Loss of capability to turn on the audio tape recorder from affected Speaker Intercom via Bus 1.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (5,4).	b) None	b) None	b) IIIb	
			S E C O N D F A I L U R E				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (5, 4) of Switch S3, Tape Recorder Switch, fails open.	a) Loss of capability to turn the tape recorder on from the affected S.I.A.	a) When the Tape Record Switch is placed in the "Record" position the Record Light does not lite.	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to the capability to turn the tape recorder on via the other 12 S.I.A.	b) Turn tape recorder on via Tape Recrder Switch on alternate S.I.A.	b) None	b) IIIb	
			F I R S T F A I L U R E				
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact set (5, 4) of Switch S3 Tape recorder Switch, fails open.	a) Loss of capability to turn on the audio tape recorder from affected Speaker Intercom via Bus 2.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (2,1)	b) None	b) None	b) IIIb	
			S E C O N D F A I L U R E				
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact set (2, 1) of Switch S3, Tape Recorder Switch, fails open.	a) Loss of capability to turn the tape recorder on from the affected S.I.A.	a) When the Tape Record Switch is placed in the "Record" position the Record Light does not lite.	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to the capability to turn the tape recorder on via the other 12 S.I.A.	b) Turn tape recorder on via Tape Recorder Switch on alternate S.I.A.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (5,6) of Switch S3, Tape Recorder Switch fails open.	a) Loss of capability to reset Voice Record Relay #1 from affected Speaker Intercom.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, having the Audio Load Compensator connected to the tape recorder has no effect.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (2,3) of Switch S3 of Tape Recorder Switch fails open.	a) Loss of capability to turn the tape recorder off from the affected S.I.A.	a) When the Tape Record Switch is placed in the "off" position, the Record Light remains on.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to capability to turn the tape recorder off via the other 12 S.I.A.	b) Turn tape recorder off via Tape Record Switch on alternate S.I.A.	b) None	b) IIIb	
			FIRST FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact Set (2,1) of Switch S1, Call Switch, fails open.	a) Loss of capability to generate a "Call" signal via Bus 1 from affected Speaker Intercom.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (5,4).	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (5,4) of Switch S1, Call Switch, fails open.	a) Loss of capability to generate a "Call" signal from the affected S.I.A.	a) Other crew members and Ground does not respond to attempted "Call" mode from affected S.I.A.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to capability to generate a "Call" signal from an alternate S.I.A.	b) Generate "Call" signal from alternate S.I.A.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact Set (5,4) of Switch S1, Call Switch, fails open.	a) Loss of capability to generate a "Call" signal via Bus 2 from affected Speaker Intercom.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy by contact set (2,1).	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Speaker Intercom 61A850003 (Any 1 of 13) (2 Flight spares)	M	a) Contact set (2,1) of Switch S1, Call Switch, fails open.	a) Loss of capability to generate a "Call" signal from the affected S.I.A.	a) Other crew members and Ground does not respond to attempted "Call" mode from affected S.I.A.	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to capability to generate a "Call" signal from an alternate S.I.A.	b) Generate "Call" signal from alternate S.I.A.	b) None	b) IIIb	
			FIRST FAILURE				
Speaker/Intercom 61A850003 (Any 1 of 13) (2 Flight Spares)	M	a) Contact set (20, 21), (20,23), or (20, 24) [(30,31) (30, 33), or (30, 34)] fails open.	a) Loss of one-half of the redundant circuitry providing Caution and Warning Tone.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact sets (30, 31), (30, 33), or (30, 34), [(20, 21), (20, 23), or (20, 24)].	b) None	b) None	b) IIIb	
			SECOND FAILURE				
		a) Contact set (30, 31), (30, 33), or (30, 34), [(20, 21) (20, 23) or (20, 24)] fails.	a) Loss of Caution and Warning Tones from the affected Speaker Intercom Assembly.	a) Master Alarm Status light lites on the S.I.A and no Caution and Warning Tones.	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, due to capability to replace the S.I.A. in-flight.	b) Replace defective S.I.A. with spare S.I.A.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Momentary, AM-CSM Call #1 (K4-32) 52-79703-43	M	a) Coil fails open.	a) Loss of capability to activate "Call" mode in CSM and to connect the mike lines of Channel A and B via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	---
(Provides a Closure to Trigger a "Call" Signal in the CSM.)		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary, AM-CSM Call #2 (K4-32) 52-79703-43	M	a) Coil fails open.	a) Loss of capability to activate "Call" mode in CSM and to connect the mike lines of Channel A and B.	a) Crew in CSM does not respond to "Call" mode.	a) Crew in CSM does not respond to "Call" mode.	a) N/A	---
(Provides a Closure to Trigger a "Call" Signal in the CSM.)		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, crew in the remaining part of the cluster can inform crew in CSM.	b) Inform crew in CSM of "Call" mode.	b) Request crew not in CSM to inform crew in CSM of the "Call" mode.	b) IIIb	
			FIRST FAILURE				
Relay, Momentary, AM-CSM Call #1 (K4-32) 52-79703-43	M	a) Pole A or B fails open.	a) Loss of capability to connect the mike lines of Channel A and B via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary, AM-CSM Call #2 (K4-33) 52-79703-43	M	a) Pole A and B fails open.	a) Loss of capability to connect the mike lines of Channel A and B.	a) No response from crew members on alternate channels while in the "Call" mode.	a) No response from crew members whose S.I.A. are on Channel A or B while trying to communicate via Channel B or A after generating a "Call" signal.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, crew can place their S.I.A. on the same channel.	b) Request crew members to use either Channel A or B exclusively while in the "Call" mode.	b) Request crew to use one Channel exclusively.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Momentary AM-CSM Call #1 (K4-32) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call" mode in CSM via AM-CSM Call Relay #1.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary, AM-CSM Call #2 (K4-33) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call" mode in CSM.	a) Crew in CSM does not respond to "Call" mode.	a) Crew in CSM does not respond to "Call" mode.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, crew in the remaining part of the cluster can inform crew in CSM of "Call" mode.	b) Inform crew in CSM of "Call" mode.	b) Request crew members not in CSM to inform crew in CSM of the "Call" mode.	b) IIIb	
			FIRST FAILURE				
Relay, Momentary, AM-CSM Call #2 (K4-33) 52-79703-43	M	a) Coil fails open.	a) Loss of capability to activate "Call" signal in CSM via DCS and the capability to connect the mike lines of Channel A and B via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary AM-CSM Call #1 (K4-32) 52-79703-43	M	a) Coil fails open.	a) Loss of capability to activate "Call" mode in CSM and to connect the mike lines of Channel A and B.	a) Crew in CSM does not respond to "Call" mode.	a) Crew in CSM does not respond to "Call" mode.	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, crew in the remaining part of the cluster can inform crew in CSM.	b) Inform crew in CSM of "Call" mode.	b) Request crew not in CSM to inform crew in CSM of the "Call" mode.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Momentary AM-CSM Call #2 (K4-33) 52-79703-43	M	a) Pole A or B fails open.	a) Loss of capability to connect the mike lines of Channels A and B.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary, AM-CSM Call #1 (K4-32) 52-79703-43	M	a) Pole A or B fails open.	a) Loss of capability to connect the mike lines of Channel A and B.	a) No response from crew members on alternate Channel while in the "Call" mode.	a) No response from crew members whose S.I.A.'s are on Channel A or B while trying to communicate via Channel B or A after generating a "Call" signal.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, crew can place their S.I.A on the same Channel.	b) Request crew members to use either Channel A or B exclusively while in the "Call" mode.	b) Request crew to use one Channel exclusively.	b) IIIb	
			FIRST FAILURE				
Relay, Momentary AM-CSM Call #2 (K4-33) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary AM-CSM Call #1 (K4-32) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call" mode in CSM.	a) Crew in CSM does not respond to "Call" mode.	a) Crew in CSM does not respond to "Call" mode.	a) N/A	---
		b) Insulating film on contacts due to contamination	b) None, crew in the remaining part of the cluster can inform crew in CSM of "Call" mode.	b) Inform crew in CSM of "Call" mode.	b) Request crew members not in CSM to inform crew in CSM of the "Call" mode.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Momentary, CSM-AM Call #1 (K4-30) 52-79703-51	M	a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM from the remaining cluster and the capability to tie Channel A and B mike lines together via AM-CSM Call Relay #1.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #2.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary CSM-AM Call #2 (K4-31) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call' signal in CSM from the remaining cluster and to tie Channel A and B mike lines together.	a) Crew in CSM does not respond to "Call" mode, and no response from crew members on alternate channel.	a) No response from crew in CSM and crew members whose S.I.A's are on Channel A or B while trying to communicate via Channel B or A after generating a "Call" signal.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, crew in the remaining part of the cluster can inform crew in CSM of "Call" mode and the crew can use one channel exclusively.	b) Inform crew in CSM of "Call" mode and request channel A or B to be used exclusively.	b) Request crew to use one channel exclusively and request crew not in CSM to inform crew in CSM of the "Call" mode.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Momentary CSM-AM Call #2 (K4-31) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM from the remaining cluster and the capability to tie Channel A and B mike lines together via AM-CSM Call Relay #2.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None due to redundancy provided by AM-CSM Call Relay #1.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary CSM-AM Call #1 (K4-30) 52-79703-43	M	a) Pole C fails open.	a) Loss of capability to activate "Call" signal in CSM from the remaining cluster and to tie channel A and B mike lines together.	a) Crew in CSM does not respond to "Call" mode, and no response from crew members on alternate channel.	a) No response from Crew in CSM and crew members whose S.I.A's are on channel A or B while trying to communicate via channel B or A after generating a "Call" signal.	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, crew in the remaining part of the cluster can inform crew in CSM of "Call" mode and the crew can use one channel exclusively.	b) Inform crew in CSM of "Call" mode and request Channel A or B to be used exclusively.	b) Request crew to use one channel exclusively and request crew not in CSM to inform crew in CSM of the "Call" mode.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S333 when any one of commands S288 - S335 is addressed.	a) Loss of capability to select the Secondary Electronics of the Instrumentation System while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failure required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S333 when any one of commands S288 - S335 is addressed from side A and B.	a) Loss of capability to select the Secondary Electronics of the Instrumentation System via the CRDU.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failures.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S332 when any one of commands S288 - S335 is addressed.	a) Loss of capability to select the Primary Electronics of the Instrumentation System while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	----------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failures.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B350005	L M S	a) 28V output from channel S332 when any one of commands S288 - S335 is addressed from side A and B.	a) Loss of capability to select the Primary Electronics of the Instrumentation System via the CRDU.	a) None	a) None	a) N/A	----------
			b) None, function is required only in event of prior failures.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S145 when any one of commands S144 - S191 is addressed.	a) Loss of Ground capability to select the Secondary Programmer while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by internally redundant CRDU.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S145 when any one of commands S144 - S191 is addressed from side A and B.	a) Loss of Ground capability to select the Secondary Programmer via the CRDU.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of failure of the Primary Programmer.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S144 when any one of commands S144 - S191 is addressed.	a) Loss of Ground capability to select the Primary Programmer while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S144 when any one of commands S144 - S191 is addressed from side A and B.	a) Loss of Ground capability to select the Primary Programmer via the CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of failure of Secondary Programmer.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S304 when any one of commands S288 - S335 is addressed.	a) Loss of capability to reset ATM SAS A and B via CRDU while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61V850005	L M S	a) 28V output from channel S304 when any one of commands S288 - S335 is addressed from Side A and B.	a) Loss of capability to reset ATM SAS A and B via CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of failure of the OWS I.U.	b) None	b) None	b) N/A (Multiple failure required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B350005	L M S	a) 28V output from channel S146 (S220) when any one of commands S144-S191 (S192-S239), is addressed.	a) Loss of ground capability to select the "CSM" position of Electrical Ground 1(2) while the A(B) side of the CRDU is powered.	a) None.	a) None.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Electrical Ground 2(1).	b) None.	b) None.	b) IIIb	
			SECOND FAILURE				
		a) 28V output from channel S146 (S220) when any one of commands S144-S191 (S192-S239) is addressed from side A and B.	a) Loss of ground capability to select the "CSM" position of Electrical Ground 1(2).	a) None.	a) None.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Electrical Ground 2(1).	b) None.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
DCS Module 4 52-85714-21	L M S	a) Channel 27 relay "OFF" contacts fails open.	a) Loss of capability to reset the DCS Secondary Power Relay.	a) None	a) None	a) N/A	------
		b) Insulating film on contacts due to contamination.	b) None - Fuction required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failure Required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) Internal short of EPS Bus 2 to EPS Bus 2 Return.	a) Loss of Secondary DCS and B side of the CRDU.	a) Cmd. System Secondary circuit Breaker bat handle will be in the "OFF" position.	a) T/M data will indicate that the secondary DCS and side B of the CRDU is not powered.	a) N/A	------
		b) Mehcanical or thermal stress.	b) None, due to redundancy provided by Primary DCS and Side A of the CRDU.	b) None	b) None	b) IIIb	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S396, S395, S399 or S397 when any one of commands S384 - S479 is addressed.	a) Loss of Ground capability to change Instrumentation Bus A and B converter configuration while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failures Required	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S396, S395 or S397 when any one of commands S384 - S479 is addressed from Side A and B.	a) Loss of Ground capability to change Instrumentation Bus A and B converter configuration via CRDU.	a) None	a) None	a) N/A	------
		b) Mechanical or Thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failures Required	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S305 when any one of channels S288 - S335 is addressed.	a) Loss of capability of deploying ATM SAS A and B via CRDU while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failure Required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S305 when any one of commands S288 - S335 is addressed from Side A and B.	a) Loss of capability of deploying ATM SAS A and B via CRDU.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A Multiple Failure Required)	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S304 when any one of commands S288 - S335 is addressed.	a) Loss of capability to reset ATM SAS A and B via CRDU while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A Multiple Failure Required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S304 when any one of commands S288 - S335 is addressed from Side A and B.	a) Loss of capability to reset ATM SAS A and B via CRDU.	a) None	a) None	a) N/A	------

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005 (Continued)	L M S	b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failures Required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S292 when any one of commands S288 - S335 is addressed.	a) Loss of the Tracking Lights Auto Switchover Mode while A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures Required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S292 when any one of commands S288 - S335 is addressed from Side A and B.	a) Loss of the Tracking Lights Auto Switchover Mode.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failures Required).	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S349 when any one of commands S336 - S383 is addressed.	a) Loss of OWS Meteoroid Shield EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	------
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of #2 Firing Unit.	b) None	b) None	b) N/A (Multiple Failures Required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S349 when any one of commands S336 - S383 is addressed from Side A and B.	a) Loss of OWS Meteoroid Shield EBW Firing Unit #1.	a) None	a) None	a) N/A	------
		b) Mechanical or Thermal Stress.	b) None, function is required only in event of prior failure of #2 Firing Unit.	b) None	b) None	b) N/A (Multiple Failures Required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S348 when any one of commands S336-S383 is addressed.	FIRST FAILURE a) Partial loss of capability to prevent inadvertently firing OWS Meteoroid Shield EBW Firing Unit 1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S348 when any one of commands S336-S383 is addressed from side A and B.	SECOND FAILURE a) Partial loss of capability to prevent inadvertently firing OWS Meteoroid Shield EBW Firing Unit 1.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S339 when any one of commands S336-S383 is addressed.	FIRST FAILURE a) Loss of OWS Meteoroid Shield EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of #2 Firing Unit.	b) None	b) None	b) N/A (Multiple failures required)	
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S339 when any one of commands S336-S383 is addressed from side A and B.	SECOND FAILURE a) Loss of OWS Meteoroid Shield EBW Firing Unit #1.	a) None	a) None	a) N/A	- - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple Failures Required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S378 (S250) when any one of commands S336-S383(S240-S287) is addressed.	a) Power will be applied to Scientific Airlock Exp. 149 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S378 (S250) when any one of commands S336-S383 (S240-S287) is addressed from side A and B.	a) Power will be applied to Scientific Airlock Exp. 149.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S172 when any one of commands S143-S191 is addressed.	a) Partial loss of capability to prevent inadvertent firing of CWS Wing Sections KKW Firing Unit 1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of KKW Firing Unit #2.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S172 when any one of commands S143-S191 is addressed from side A and B.	a) Partial loss of capability to prevent inadvertent firing of OWS Wing Sections EBW Firing Unit 1.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of EBW Firing Unit #2.	b) None	b) None	b) N/A (Multiple failures required)	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S183 or S163 when any one of commands S143-S191 is addressed.	a) Loss of OWS SAS Fairings EBW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of EBW Firing Unit #2.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S183 or S163 when any one of commands S143-S191 is addressed from side A and B.	a) Loss of OWS SAS Fairings EBW Firing Unit #1.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of EBW Firing Unit #2.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S182 when any one of commands S143-S191 is addressed.	a) Partial loss of capability to prevent inadvertent firing of OWS SAS Fairings EEW Firing Unit #1 while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S182 when any one of commands S143-S191 is addressed from side A and B.	a) Partial loss of capability to prevent inadvertent firing of OWS SAS Fairings EEW Firing Unit #1.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S159 when any one of commands S144-S191 is addressed.	a) Loss of capability to turn on the 40°F thermostat control on the AM Wall Heaters while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure the 40°F and 60°F thermostats are both turned on. The 40°F provides a back-up for the 60°F.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S159 when any one of commands S144-S191 is addressed from side A and B.	a) Loss of capability to turn on the 40°F thermostat control on the AM Wall Heaters via the CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure the 40°F and 60°F thermostats are both turned on. The 40°F provides a back-up for the 60°F.	b) None	b) None	b) N/A (Multiple failures required)	
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S158 when any one of commands S144-S191 is addressed.	a) Loss of capability to turn off the 40°F thermostat control on the AM Wall Heaters while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the internally redundant CRDU.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S158 when any one of commands S144-S191 is addressed from side A and B.	a) Loss of capability to turn off the 40°F thermostat control on the AM Wall Heater via CRDU.	a) None	a) T/M data will indirectly indicate that the 40°F thermostat controls were not turned off.	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) None, function is required only in event of prior failure of the thermostats or heaters.	b) Manually turn off the 40°F thermostat upon Ground request.	b) Request crew to manually turn off the 40°F thermostat control.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S336 or S340 when any one of commands S336-S383 is addressed.	a) Partial loss of protection against inadvertently switching AFM deployment control from OWS IU to CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S336 or S340 when any one of commands S336-S383 is addressed from side A and B.	a) Partial loss of protection against inadvertently switching AFM deployment control from OWS IU to CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S322 when any one of commands S288-S335 is addressed	a) Partial loss of protection against prematurely jettisoning the Payload Shroud while the A(B) side of the CRDU is powered.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure	b) None	b) None	b) N/A (Multiple failures required)	
			SECOND FAILURE				
Command Relay Driver Unit 61B850005	L M S	a) 28V output from channel S322 when any one of commands S288-S335 is addressed from side A and B.	a) Partial loss of protection against prematurely jettisoning the Payload Shroud.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress	b) None, function is required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			F I R S T F A I L U R E				
Diode, Blocking For Emer. Start For Secondary Electronic Timer Channel S252 52-79728-1 2.2.30	L M S	a) Short	a) Loss of isolation between channels S138 and S252 of the CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to redundancy, secondary signal source only.	b) None	b) None	b) IIIb	
		a) Open.	a) Loss of channel S252 of CRDU to activate the emergency start of the secondary Electronic Timer.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Defective bond due to mechanical stress.	b) None, due to redundancy provided by channel S138 of the CRDU.	b) None	b) None	b) IIIb	
			S E C O N D F A I L U R E				
Diode, Blocking For Emer. Start For Secondary Electronic Timer Channel S138 52-79728-1	L M S	a) Short	a) Complete loss of isolation between CRDU channesl S138 and S252.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None , due to redundancy, secondary signal source only.	b) None	b) None	b) IIIb	
		a) Open	a) Loss of Emergency Start function of the Secondary Electronic Timer.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Defective bond due to mechanical stress.	b) None, function is required only in event of prior failure of the Primary Electronic Timer.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Diode, Blocking For Emer. Start For Secondary Electronic Timer Channel S138 52-79728-1 2.2.31	L M S	a) Short	a) Loss of isolation between channels S252 and S138 of the CRDU.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to redundancy, secondary signal source only.	b) None	b) None	b) IIIb	
		a) Open	a) Loss of channel S138 of CRDU to activate the emergency start of the Secondary Electronic Timer.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Defective bond due to mechanical or thermal stress.	b) None, due to redundancy provided by channel S252 of the CRDU.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Diode, Blocking for Emerg. Start for Secondary Electronic Timer Channel S252 52-79728-1	L M S	a) Short	a) Complete loss of isolation between CRDU Channels S138 and S252.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Contamination	b) None, due to redundancy, secondary signal source only.	b) None	b) None	b) IIIb	
		a) Open	a) Loss of emergency start function of the Secondary Electronic Timer.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Defective bond due to mechanical or thermal stress.	b) None, function is required only in event of prior failure of the Primary Electronic Timer.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Diode, Blocking for Either Reset Line of the Primary or Secondary DCS. 52-79728-1 (1 of 4) 2.2.35 2.2.36 2.2.37 2.2.38	L M S	a) Short	a) None, blocking function is required for protection from GSE.	a) None	a) None	a) N/A	--------
		b) Contamination	b) None, required for GSE application only.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
	L M S	a) 2 diodes short	a) None, blocking function is required for protection from GSE.	a) None	a) None	a) N/A	--------
		b) Contamination	b) None, required for GSE application only.	b) None	b) None	b) IIIb	
			FIRST FAILURE				
Diode, Blocking for Set Line of the Primary or Secondary DCS. 52-79728-1 (1 of 2) 2.2.39 2.2.40	L M S	a) Short	a) None, blocking function is required for protection from GSE.	a) None	a) None	a) N/A	--------
		b) Contamination	b) None, required for GSE application only.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
	L M S	a) 2 Diodes short	a) None, blocking function is required for protection from GSE.	a) None	a) None	a) N/A	
		b) Contamination	b) None, required for GSE application only.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, toggle. Teleprint 52-79705-13 2.2.44	L M S	a) Contact set (2,3) fails open in the "ON" position.	a) Loss of one of the redundant methods of providing power to the paper advance motor.	a) None	a) None	a) N/A	--------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by contact set (5,6)	b) None	b) None	b) IIIb	
			SECOND FAILURE				
	L M S	a) Contact set (2,3) and (5,6) fail open in the "ON" position.	a) Loss of manual capability to power the IEU and Teleprinter	a) The teleprinter is inoperative when the Teleprint Switch is in the "ON" position.	a) T/M data will indicate that the I.E.U and Teleprinter are not powered.	a) N/A	--------
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by DCS.	b) Place the switch in the "Cmd" position. Inform Ground of discrepancy.	b) Request crew to place the Teleprint Switch in the "Cmd" position.	b) IIIb	
			FIRST FAILURE				
Relay, momentary, A4/OWS SAL 1A (2A) -off isolation. (K4-89) (K4-95) 52-79703-1 (1 of 2)	L M S	a) Coil fails open or Pole A fails open.	a) Power will be applied to Scientific Airlock Exp. 149.	a) None	a) None	a) N/A	--------
		b) Defective terminal or wire subjected to mechanical or thermal stress, or insulating film on contacts due to contamination.	b) None, function is required only in event of prior failure.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Scientific Airlock Exp. 149 Package	L M S	a) Bus power shorts to return.	a) Loss of Scientific Airlock Exp. 149 Package.	a) Associated circuit breaker but handle will be in the "off" position.	a) OWS/T/M data will indicate that Scientific Airlock Exp. 149 does not respond to commands.	a) N/A	--------
		b) Mechanical or thermal stress.	b) None, due to protection provided by circuit breaker.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Latching DCS Secondary Power (X4-40) 52-79703-53		a) Pole B fails open in latch position.	a) None, function prevents an inadvertent CRDU command from powering down both DCS's.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, function required only in event of prior failure.	b) None	b) None	b) N/A (Multiple failures required)	
			SECONDARY FAILURE				
Command Relay Driver Unit 61B350005	L M S	a) 28V output from channel S280 when any one of commands S240-S287 is addressed.	a) Secondary DCS will be inadvertently powered down.	a) None	a) T/M data will indicate that the Secondary DCS is not powered.	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) If occurs during storage with the Primary DCS powered down, the loss of the command system will preclude revisitation.	b) Upon Ground request manually select the Primary DCS.	b) Request crew to select the Primary DCS.	b) II	
			FIRST FAILURE				
Relay, DCS Secondary Power Control (X4-41) 52-79715-11		a) Pole B fails open	a) None, function prevents an inadverent CRDU command from powering down both DCS's.	a) None	a) None	a) N/A	- - - - - - - - - -
		b) Insulating film on contacts due to contamination.	b) None, function required only in event of prior failure.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Command Relay Driver Unit 61B350005	L M S	a) 28V output from channel S280 when any one of commands S240-S287 is addressed.	a) Secondary DCS will be inadvertently powered down.	a) None	a) T/M data will indicate that the Secondary DCS is not powered.	a) N/A	- - - - - - - - - -
		b) Mechanical or thermal stress.	b) If occurs during storage with the Primary DCS powered down, the loss of the command system will preclude revisitation.	b) Upon Ground request manually select the Primary DCS.	b) Request crew to select the Primary DCS.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, Toggle, C&W System - Power - C&W 52-79705-17 2.3.12	M	a) Contact set (2,1) fails open in "OFF" position.	a) Loss of capability to reset C&W Sensor Power Relay #2.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None, due to adequate power provisions and circuit protection provided by associated circuit breakers.	b) None	b) None	b) IIIb	
	M	a) Contact set (5,4) fails open in "OFF" position.	a) Loss of capability to reset C&W Sensor Power Relay #1.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None, due to adequate power provisions and circuit protection provided by the associated circuit breakers.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
C&W High Level Audio Amplifier 61B850012 2.3.289	M	a) Internal short to EPS Bus 1(2) Return.	a) Loss of capability of powering the C&W High Level Audio Amplifier from EPS Bus 1(2).	a) C&W System Tone Amp. - C&W #1(2) Circuit Breaker's Bat handle will be in the "OFF" position.	a) None	a) N/A	---
		b) Mechanical or thermal stress.	b) None, due to redundant EPS Buses and circuit protection provided by C&W System Tone Amp. - C&W #1(2) Circuit Breakers.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, Momentary Telelight, C&W System - Master Alarm Telelight 52-79710-797 2.3.20	M	a) Loss of indicator light (1 of 4).	a) None, due to redundant lights.	a) None	a) None	a) N/A	---
		b) Mechanical or thermal over-stress.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Switch, Momentary Telelight, C&W System - Master Alarm Telelight 52-79710-797 2.3.20	M	a) Loss of 2 indicator lights.	a) Loss of indicator lights powered from one C&W Subunit.	a) During in-flight testing with one C&W Subunit powered down, and an alarm on the other, there is no indicator light.	a) None	a) N/A	---
		b) Mechanical or thermal stress.	b) None, due to indicator lights powered from the alternate C&W Subunit.	b) None, continue mission.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, Momentary Telelight, C&W System - Memory Recall Telelight 52-79710-799 2.3.21	M	a) Contact set (7,8) fails open in "Memory Recall" position.	a) Loss of capability to recall information from memory of C&W Subunit #1.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None, due to redundancy provided by C&W Subunit #2.	b) None	b) None	b) IIIb	
		a) Contact set (9, 10) fails open in the "Memory Recall" position.	a) Loss of capability to recall information from memory of C&W Subunit #2.	a) None	a) None	a) N/A	---
		b) Contamination.	b) None, due to redundancy provided by C&W Subunit #1.	b) None	b) None	b) IIIb	
		a) Loss of an indicator light. (1 of 4)	a) None, due to redundant lights.	a) None	a) None	a) N/A	---
		b) Mechanical or thermal overstress.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Switch, Momentary Telelight, C&W System - Memory Recall Telelight 52-79710-799 2.3.21	M	a) Contact set (7,8) and (9,10) fails open.	a) Loss of capability to recall information from memory of the C&W Subunits.	a) After the C&W Unit has been triggered and the Memory Recall Switch is depressed, no parameter I.D. lights illuminate.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) Loss of capability to determine from memory which parameter is intermittent	b) Increase surveillance of C&W Display Panel.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			SECOND FAILURE				
Switch, Momentary Telelight, C&W System - Memory Recall Telelight 52-79710-799 2.3.21 (Continued)	M	a) Loss of 2 indicator lights.	a) Loss of indicator light powered from one C&W Subunit.	a) During in-flight testing with one C&W Subunit powered down, the switch is depressed and there is no indicator light (Memory lights the appropriate parameter I.D. lights).	a) None	a) N/A	---
		b) Mechanical or thermal stress.	b) None, due to indicator lights powered from the alternate C&W Subunit.	b) None, continue mission.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Master Alarm Reset #1(2) (K11-13) (K11-14) 52-79703-43 2.3.22 2.3.23	M	a) Coil fails open.	a) None, due to redundancy provided by Master Alarm Reset Relay #2.	a) None	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None	b) None	b) None	b) IIIb	
		a) Contact set A, B, C, or D fails open.	a) None, due to redundancy provided by Master Alarm Reset Relay #2.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Master Alarm Reset #2(1) (K11-14) (K11-13) 52-79703-43 2.3.23 2.3.22	M	a) Coil fails open.	a) Loss of capability to reset the C&W System via Master Alarm Test/Reset Switches on the Fire Sensor Control Panels.	a) The C&W System is not reset when the Master Alarm Test/Reset Switches on the Fire Sensor Control Panels is placed in the "RESET" position.	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) None, system can be reset via Master Alarm Telelight Switch.	b) Reset the C&W System via Master Alarm Telelight Switch.	b) None	b) IIIb	
		a) Contact set B(A) fails open.	a) Loss of capability to reset the Emergency Subunit 1(2) via Master Alarm Test/Reset Switch on the Fire Sensor Control Panels.	a) Emergency Subunit 1(2) is not reset when the Master Alarm Test/Reset Switch on the Fire Sensor Control Panels is placed in the "RESET" position.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, system can be reset via Master Alarm Telelight Switch.	b) Reset the C&W System via Master Alarm Telelight Switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			SECOND FAILURE				
Relay, Master Alarm Reset #2(1) (K11-14) (K11-13) 52-79703-43 2.3.23 2.3.22 (Continued)	M	a) Contact set D(C) fails open.	a) Loss of capability to reset the C&W Subunit #1(2) via Master Alarm Test/Reset Switch on the Fire Sensor Control Panel.	a) C&W Subunit #1(2) is not reset when the Master Alarm Test/Reset Switch on the Fire Sensor Control Panel is placed in the "RESET" position.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, system can be reset via Master Alarm Telelight Switch.	b) Reset C&W Subunit #1(2) via Master Alarm Telelight Switch.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Latching, C&W Sensor Power #1(2) (K11-3) (K11-4) 52-79703-5 2.3.24 2.3.25	M	a) Latch coil fails open or contact set C, D, E or F fails open in the latch position.	a) None, due to redundancy provided by C&W Sensor Power Relay #2(1).	a) None	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress. Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Latching, C&W Sensor Power #2(1) (K11-4) (K11-3) 52-79703-5 2.3.25 2.3.24	M	a) Latch coil fails open.	a) Loss of capability to power the: 1. C&W High Level Audio Amplifier. 2. Cluster Low Pressure Sensors. 3. CWS Gas Flowmeter Converter. 4. Condensate Tank Δ P Sensor.	a) Master Alarm Status Light on the S.I.A. does not light when the C&W System is triggered.	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal stress.	b) Loss of capability to monitor the associated sensors via the C&W System.	b) Increase surveillance of system whose sensors are not powered.	b) None	b) IIIa	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			SECOND FAILURE				
Relay, Latching, C&W Sensor Power #2(1) (K11-4) (K11-3) 52-79703-5 2.3.25 2.3.24 (Continued)	M	a) Contact set C, D, E, or F fails open in the latch position.	a) Loss of capability to power the C&W High Level Audio Amplifier from EPS Bus 1(2).	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by EPS Bus 2(1).	b) None	b) None	b) IIIb	
			FIRST FAILURE				
Relay, Latching, C&W Sensor Power #2(1) (K11-4) (K11-3) 52-79703-5 2.3.25 2.3.24	M	a) Reset coil fails open as contact set B fails open in the latch position.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus power from the C&W Sensors.	a) None	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal overstress or insulating film on contacts due to contamination.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Caution & Warning High Level Audio Amplifier 61B850012 2.3.289	M	a) Internal short to EPS Bus 1(2) Return.	a) Loss of capability of powering the C&W High Level Audio Amplifier from EPS Bus 1(2).	a) C&W System Tone Amp. - C&W #1(2) Circuit Breaker's bat handle will be in the "OFF" position.	a) None	a) N/A	---
		b) Mechanical or thermal stress.	b) None, due to redundant EPS Buses and circuit protection provided by C&W System Tone Amp - C&W #1(2) Circuit Breaker.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	c) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Slow Release, C&W Sensor Power Control #1(2) (K11-5) (K11-6) 52-79715-13 2.3.26 2.3.27	M	a) Coil fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus Power from the C&W Sensors.	a) None	a) None	a) N/A	---
		b) Defective terminal or wire subjected to mechanical or thermal overstress.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
		a) Contact set B fails open.	a) Loss of capability to remove EPS Control Bus Power from the High Level Audio Amplifier and AM Bus Power from the C&W Sensors.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to adequate power provisions.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Caution & Warning High Level Audio Amplifier 61B850012 2.3.289	M	a) Internal short to EPS Bus 1(2) Return.	a) Loss of capability of powering the C&W High Level Audio Amplifier from EPS Bus 1(2).	a) C&W System Tone Amp. - C&W #1(2) Circuit Breaker's bat handle will be in the "OFF" position.	a) None	a) N/A	---
		b) Mechanical or thermal stress.	b) None, due to redundant EPS Buses and circuit protection provided by C&W System Tone Amp. - C&W #1(2) Circuit Breaker.	b) None	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, Slow Release, C&W Sensor Power Control #1(2) (K11-5) (K11-6) 52-79715-13 2.3.26 2.3.27	M	a) Contact set A fails open.	a) None, due to redundancy provided by C&W Sensor Power Relay #2(1).	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Slow Release, C&W Sensor Power Control #2(1) (K11-6) (K11-5) 52-79715-13 2.3.27 2.3.26	M	a) Contact set A fails open.	a) Loss of capability to power the: 1. C&W High Level Audio Amplifier. 2. Cluster Low Pressure Sensor. 3. OWS Gas Flowmeter Converters. 4. Condensate Tank Δ P Sensor.	a) Master Alarm Status Light on the S.I.A. does not light when the C&W System is triggered.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) Loss of capability to monitor the associated sensors via the C&W System.	b) Increase surveillance of system whose sensors are not powered.	b) None	b) IIIa	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, Toggle, C&W Inhibit Panel C&W Power 1 61C769014-1 2.3.30	M	a) Contact set (2,3) or (5,6) fails open.	a) Loss of one-half of the capability to monitor the 28V and 5V output of C&W DC/DC Converter #1.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant monitoring circuits for C&W DC/DC Converter #1.	b) None	b) None	b) I[illegible]	
			SECOND FAILURE				
Switch, Toggle, C&W Inhibit Panel C&W Power 1 61C769014-1 2.3.30	M	a) Contact set (2,3) and (5,6) fail open.	a) Loss of capability to monitor the 28V and 5V output of C&W DC/DC Converter #1.	a) During in-flight testing when C&W Subunit #1 is turned off "C&W Power" I.D. light does not remain on.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, function is required only in event of prior failure.	b) Verify proper operation of C&W Subunit #1 and continue mission.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, Toggle, C&W Inhibit Panel C&W Power 2 61C769014-1 2.3.31	M	a) Contact set (2,3) or (5,6) fails open.	a) Loss of one-half of the capability to monitor the 28V and 5V output of C&W DC/DC Converter #2.	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant monitoring circuits for C&W DC/DC Converter #2.	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Switch, Toggle, C&W Inhibit Panel C&W Power 2 61C769014-1 2.3.31	M	a) Contact set (2,3) and (5,6) fail open.	a) Loss of capability to monitor the 28V and 5V output of C&W DC/DC Converter #2.	a) During in-flight testing when C&W Subunit #2 is turned off "C&W Power" I.D. light does not remain on.	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, function is required only in event of prior failure.	b) Verify proper operation of C&W Subunit #2 and continue mission.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Instrumentation Package 1(2) 61A880000 (1 of 2) 2.3.52A 2.3.52B	M	a) Loss of output from pin T of connector P3.	a) Loss of capability of C&W Subunit #1(2) to monitor C&W Signal Conditioning Power to Instrumentation Package #2(1).	a) None	a) None	a) N/A	---
		b) Open.	b) None, due to redundancy provided by Instrumentation Package #2(1).	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Caution and Warning Sig. Cond. Pri. (Sec.) Display Converter 61C880052 2.3.71B 2.3.71B	M	a) Loss of power to Instrumentation Package 1(2).	a) Loss of Instrumentation Package 1(2) and associated inputs to C&W Subunits.	a) During in-flight testing, Instrumentation Package 1(2) does not trigger C&W Subunit #1(2).	a) None	a) N/A	---
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by Signal Conditioner Secondary (Primary) Display Converter, Instrumentation Package 2(1) and C&W Subunit #2(1).	b) Verify proper operation of Instrumentation Package 2(1) and continue mission.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Relay, latching, Crew Alert No. 1 (2) (K11-1) (K11-2) 52-79703-45 (1 of 2) 2.3.120 2.3.121	M	a) Pole C(D) open in the latch position.	a) None, due to redundancy provided by pole D(C) and CSM-AM Call Relay No. 2(1).	a) None	a) None	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Relay, Momentary, CSM-AM Call #2(1) (K4-31) K4-30) 52-79703-43 2.1.12 2.1.11		a) Pole D fails open.	a) Loss of CSM and Ground capability to activate the "Call" signal on Channel A(B).	a) Crew does not answer Channel A "Call" signal generated from CSM.	a) Crew whose S.I.A. is in the "A/Sleep" ("B/Sleep") position will not respond to the "Crew Alert".	a) N/A	---
		b) Insulating film on contacts due to contamination.	b) None, due to redundant channels.	b) Return to MDA and activate Channel A "Call" signal via S.I.A. Call Switch.	b) Request other crew members to activate "Call" mode.	b) IIIb	
			FIRST FAILURE				
Instrumentation Package 1(2) 61A880000 (1 of 2) 2.3.52A 2.3.52B	M	a) Loss of output from pin CC of connector P2.	a) None, due to redundancy provided by Instrumentation Package 2(1).	a) None	a) None	a) N/A	---
		b) Open.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Instrumentation Package 2(1) 61A880000 (1 of 2) 2.3.52B 2.3.52A		a) Loss of output from pin CC of connector P2.	a) Loss of capability of C&W System to monitor PPO_2.	a) Crew display of PPO_2 will indicate an out of tolerance level of PPO_2 and there is no Warning on the C&W System.	a) T/M data will indicate that the PPO_2 level is out of tolerance and there is no Warning on C&W System.	a) N/A	---
		b) Open.	b) None, due to T/M data of PPO_2 and crew display.	b) None	b) Inform crew of discrepancies.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
EVA 1(2) Suit Inlet Sensor #1(2) 52-88721-205 (1 of 4) 2.3.137, 2.3.138 2.3.139, 2.3.140	M	a) Loss of output from Red or Blue pins.	a) Loss of output to Instrumentation Package No. 1(2).	a) None	a) None	a) N/A	---
		b) Open.	b) None, due to redundancy provided by EVA 1(2) Suit Inlet Sensor #2(1).	b) None	b) None	b) IIIb	
			SECOND FAILURE				
EVA 1(2) Suit Inlet Sensor #2(1) 52-88721-205 (1 of 4)	M	a) Loss of output from Red or Blue pins.	a) Loss of capability of C&W System to monitor EVA 1(2) Suit Inlet temperature.	a) None	a) T/M data will indicate that suit inlet temperature is out of tolerance and there is no Warning on the C&W System.	a) N/A	---
		b) Open.	b) None, due to T/M capability of monitoring inlet temperature.	b) None	b) Inform crew of discrepancies.	b) IIIb	
			FIRST FAILURE				
Fuse, Reg. Bus 1(2) C&W Monitor High 1(2) 52-79720-322 (1 of 4) 2.3.128, 2.3.129 2.3.130, 2.3.131	M	a) Fails open.	a) None, due to redundancy provided by Reg. Bus 1(2) C&W Monitor High 2(1) fuses and associated circuitry.	a) None	a) None	a) N/A	---
		b) Opens before break current is exceeded.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Fuse, Reg. Bus 1(2) C&W Monitor High 2 (1) 52-79720-322 (1 of 4)	M	a) Fails open.	a) Loss of C&W capability to monitor Reg. Bus 1(2) high voltage.	a) None	a) T/M data of Reg. Bus voltage will indicate a high voltage and no Warning on the C&W System.	a) N/A	---
		b) Opens before break current is exceeded.	b) None, due to T/M capability of monitoring Reg. Bus voltage.	b) None	b) Inform crew of discrepancies.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Rapid Δ P Sensor #1 (2) 61B880059 (1 of 2) 2.3.259 2.3.260	M	a) Loss of output from pin N or R.	a) None, due to redundancy provided by pin R or N.	a) None	a) None	a) F/A	---
		b) Open due to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Rapid Δ P Sensor #1 (2) 61B880059 (1 of 2)	M	a) Loss of output from pin N and R.	a) Loss of capability of Rapid Δ P Sensor #1 (2) to trigger Emergency Subunit #1.	a) During in-flight testing Rapid Δ P Sensor #1(2) will not trigger Emergency Subunit #1(2)	a) T/M data will indicate a rapid Δ P/Δ T Emergency on Emergency Subunit #2(1) and not on Emergency Subunit #1 (2).	a) N/A	---
		b) Open due to mechanical or thermal stress.	b) None, due to redundancy provided by Rapid Δ P Sensor #2 (1) and Emergency Subunit #2 (1).	b) None	b) Inform crew of discrepancy.	b) IIIb	
			FIRST FAILURE				
Fire Sensor 61B880060 (1 of 22) 2.3.237- 2.3.258	M	a) Loss of output from pin K or L.	a) None, due to redundancy provided by pin L or K.	a) None	a) None	a) N/A	---
		b) Open due to mechanical or thermal stress.	b) None	b) None	b) None	b) IIIb	
			SECOND FAILURE				
Fire Sensor 61B880060 (1 of 22)	M	a) Loss of output from pin K and L.	a) Loss of capability of the Fire Sensor to trigger Emergency Subunits 1 & 2.	a) During in-flight testing the Fire Sensor will not trigger Emergency Subunits 1 & 2.	a) None	a) N/A	---
		b) Open due to mechanical or thermal stress	b) None, due to partial overlap of sensor coverage and the crews capability to detect a fire. In-flight testing will detect the Fire Sensor failure. Fire Sensor is in-flight replaceable.	b) Isolate failure to Fire Sensor and replace the Fire Sensor.	b) None	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, toggle, C&W Inhibit Panel-CWS EXP Fire 1(2) 61C769014-1	M	a) Contact set (2,3) [(5,6)] fails open.	a) None due to redundancy provided by contact set (5,6) [(2,3)] .	a) None.	a) None.	a) N/A	—
		b) Insulating film on contacts due to contamination.	b) None.	b) None.	b) None.	b) IIIb	
Switch, toggle, C&W Inhibit Panel CWS QTRS Fire 1(2) 61C769014-1	M	a) Contact set (2,3) [(5,6)] fails open.	a) None due to redundancy provided by contact set (5,6) [(2,3)] .	a) None.	a) None.	a) N/A	—
		b) Insulating film on contacts due to contamination.	b) None.	b) None.	b) None.	b) IIIb	
Switch, toggle, C&W Inhibit Panel-MDA/STS Fire 1(2) 61C759014-1 (1 of 2)	M	a) Contact set (2,3) [(5,6)] fails open.	a) None due to redundancy provided by contact set (5,6) [(2,3)] .	a) None.	a) None.	a) N/A	— — —
		b) Insulating film on contacts due to contamination.	b) None.	b) None	b) None.	b) IIIb	
Switch toggle, C&W Inhibit Panel-AM AFT Fire 1(2) 61C769014-1 (1 of 2)	M	a) Contact set (2,3) [(5,6)] fails open.	a) None due to redundancy provided by contact set (5,6) [(2,3)] .	a) None.	a) None	a) N/A	— — —
		b) Insulating film on contacts due to contamination.	b) None.	b) None.	b) None.	b) IIIb	
Switch toggle, C&W Inhibit Panel-CWS FWD Fire 2(2) 61C769014-1 (1 of 2)	M	a) Contact set (2,3) [(5,6)] fails open	a) None due to redundancy provided by contact set (5,6) [(2,3)] .	a) None.	a) None.	a) N/A	—
		b) Insulating film on contacts due to contamination.	b) None.	b) None.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			SECOND FAILURE				
Switch toggle, C&W Inhibit Panel Fire (1 of 10)	M	a) Contact set (5,6) [(2,3)] fails open.	a) Loss of capability to detect a "fire closure" from the associated fire sensor on the C&W System.	a) During in flight testing, the associated fire sensor will not trigger the C&W System.	a) None.	a) N/A	—
		b) Insulating film on contacts due to contamination.	b) None, due to partial overlap of fire sensors and to crew's capability to detect a fire.	b) Increase surveillance of area covered by the associated fire snesor.	b) None.	b) IIIb	
			FIRST FAILURE				
Diode, blocking, C&W System Caution & Warning Test circuitry 52-79728-1 (1 of 336)	M	a) Short	a) None, due to redundant diodes.	a) None.	a) None.	a) N/A	—
		b) Contamination	b) None.	b) None.	b) None.	b) IIIb	
			SECOND FAILURE				
Diode, blocking, C&W System Caution & Warning Test circuitry 52-79728-1 (1 of 336)	M	a) Redundant diode shorts.	a) All the Caution and Warning channels will be activated when diode shorts or when the associated sensor is triggered due to an out-of-spec condition.	a) All of the Caution and Warning channels will be on at one time.	a) None.	a) N/A	—
		b) Contamination.	b) None, the individual channel can be inhibited via the associated Inhibit Switch.	b) Isolate shorted diodes by placing the associated Inhibit Switch in the "Inhbiit" position.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Caution & Warning High Level Audio Amplifier 61B350012 2.3.289	M	a) Loss of output from F or G of connector P1.	a) Loss of one of the redundant paths for the Caution & Warning Audio Tones from Caution & Warning Subunit #1.	a) None.	a) None.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by the Speaker Intercom Electronics.	b) None.	b) None.	b) IIIb	
			SECOND FAILURE				
Caution & Warning High Level Audio Amplifier 61B350012 2.3.289	M	a) Loss of C&W Subunit #1 Caution and Warning Tones to the S.I.A's.	a) Loss of Caution & Warning Tones from C&W Subunit #1.	a) This will be approximately a 6db drop in the Caution & Warning Tone. During C&W System tests there will be no C&W Tones from C&W Subunit #1.	a) None.	a) N/A	—
		b) Mechanical or thermal stress.	b) None, due to redundancy provided by C&W Subunit #2.	b) None.	b) None.	b) IIIb	

COMPONENT	MISSION PHASE	a) FAILURE MODE b) MOST PROBABLE FAILURE CAUSE	FAILURE EFFECT a) SYSTEMS b) MISSION	CREW a) INDICATION b) ACTION	GROUND a) INDICATION b) ACTION	a) TIME TO ABORT (HRS) b) FAILURE CATEGORY	RECOMMENDATIONS
			FIRST FAILURE				
Switch, toggle, Antenna 52-79705-133	L M S	a) Contact set (2,1) [(5,4)] fails open in the "Deploy" position.	a) Loss of crew capability to activate Discone Ant. #1 Release Actuator #1(2) and Discone Ant. #2 Release Actuator #1(2).	a) None.	a) None.	a) N/A	—
		b) Insulating film on contacts due to contamination.	b) None, due to redundancy provided by Discone Ant. #1 Release Actuator #2(1) and Discone Ant. #2 Release Actuator #2(1).	b) None.	b) None.	b) IIIb	
			SECOND FAILURE				
Switch, toggle, Antenna 52-79705-133	L M S	a) Contact set (5,4) [(2,1)] fails open in the "Deploy" position.	a) Loss of crew capability to activate Discone Ant. #1 Release Actuator #1 and #2 and Discone Ant. #2 Release Actuator #1 and #2.	a) Discone Antennas are not deployed.	a) None.	a) N/A	—
		b) Insulating film on contacts due to contamination.	b) None, Ground can deploy Discone Antennas via DCS.	b) Place the Antenna Switch in the "Cmd" position and request Ground to deploy the antennas.	b) Upon crew request deploy Discone Antennas via DCS.	b) IIIb	